U. S. DEPARTMENT OF AGRICULTURE.

OFFICE OF EXPERIMENT STATIONS—BULLETIN NO. 116.

A. C. TRUE, Director.

DIETARY STUDIES IN NEW YORK CITY

IN

1896 and 1897.

BY

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AND

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WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1902.

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[Continued on third page of cover.]

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OFFICE OF EXPERIMENT STATIONS.

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LETTER OF TRANSMITTAL.

U. S. Department of Agriculture,
Office of Experiment Stations,
Washington, D. C., July 2, 1902.

Sir: In order to secure satisfactory dietary standards, it is necessary to know the amounts of food actually consumed by a considerable number of persons of different food habits and living under different circumstances as regards occupation and environment. The studies made under the auspices of this Department have furnished much information regarding the dietaries of farmers, professional men, laborers, mechanics, college and university students (both men and women), persons of limited incomes living in large cities, etc. The studies reported herewith were made with families for the most part in poor circumstances, living in the thickly congested districts of New York City. The statistics regarding the families studied and their food consumption were gathered by Dr. Isabelle Delaney. Almost without exception the families were of the type frequently receiving help from charitable organizations. In some cases the income was as large as many families live upon in comparative comfort. In other cases the income was very small.

The data recorded show that the lack of proper food was frequently due to ignorance in buying and preparing it, or to some similar cause. Before the condition of families like many of those studied can be permanently improved, it is necessary to learn the errors which are commonly made in their domestic economy. Studies like those reported are a help in this regard. Indeed, the results already obtained have been made use of by the New York Society for the Improvement of the Condition of the Poor, which cooperated with this Department in carrying on this investigation.

The investigations were made under the immediate direction of the chief of the nutrition investigations, Prof. W. O. Atwater, of Wesleyan University.

The report is submitted with the recommendation that it be published as Bulletin No. 116 of this Office.

A. C. True,
Director.

Hon. James Wilson,
Secretary of Agriculture.

CONTENTS.

DIETARY STUDIES IN NEW YORK CITY IN 1896 AND 1897.

INTRODUCTION.

The most reliable data concerning the food consumption of people of different nationality, age, sex, and occupation, living under different financial and hygienic conditions, are obtained by means of dietary studies. These have been carried on quite actively in the United States during recent years, to some extent by independent investigators, but more extensively by individuals and institutions in different parts of the country working in cooperation with the United States Department of Agriculture. A number of these investigations were made with families with very limited incomes, more particularly those living in the congested districts of some of the larger cities, so that considerable information concerning the normal and usual food consumption of such persons has accumulated. The information thus obtained is of much importance, for besides being of direct value to those interested in improving the conditions of the less favored classes of the community, it forms an indispensable part of the general data of an adequate and comprehensive science of nutrition, especially in establishing dietary standards.

The present bulletin reports thirty-six studies made under the auspices of the Department of Agriculture among people with very limited means living in the more congested districts of New York City. They are a continuation of previous studies,[a] which were similar in character to studies carried on about the same time in Pittsburg[b] and in Chicago.[c] Studies made among Mexican families in New Mexico[d] and among negroes in Alabama[e] and Virginia[f] show the food consumption of people with very limited means but not crowded together in cities.

Among other studies made among families of very limited means in

[a] U. S. Dept. Agr., Office of Experiment Stations Bul. 46.
[b] U. S. Dept. Agr., Office of Experiment Stations Bul. 52.
[c] U. S. Dept. Agr., Office of Experiment Stations Bul. 55.
[d] U. S. Dept. Agr., Office of Experiment Stations Buls. 40 and 54.
[e] U. S. Dept. Agr., Office of Experiment Stations Bul. 38.
[f] U. S. Dept. Agr., Office of Experiment Stations Bul. 71.

this country that might be especially mentioned here is an extensive series carried on by Miss Amelia Shapleigh, with the aid and supervision of Mrs. Ellen H. Richards, among poor families in Philadelphia and Chicago,[a] but not yet published in detail. Some interesting studies were also undertaken in Hartford, Conn., by Miss Helen M. Hall under the joint auspices of the Hartford School of Sociology and the Storrs (Conn.) Experiment Station.[b]

Investigations of a similar nature have been carried on in other countries. Among these the recent dietary studies among laboring classes in Edinburgh by Drs. Noël, Paton, J. Craufurd Dunlop, and Elsie M. Inglis,[c] and those of laborers' families in York, England, made by Mr. B. Seebohm Rowntree,[d] are of particular interest in this connection, both because of their large intrinsic importance and because they were carried on by the same methods as those of the studies here reported and among families in much the same circumstances.

DIETARY STUDIES IN NEW YORK CITY.

As already suggested, the particular purpose of the investigations reported on the following pages and in the bulletin previously mentioned[e] was to obtain reliable data concerning the food consumption of the classes of people living in the crowded districts of New York City. It seemed most advisable to make dietary studies among selected families that were believed to be representative of the regions in which they lived. To make such a selection, however, and to secure accurate and reliable statistics, it was necessary that the work be done by some one who was in sympathy with the people and familiar with their daily life. Those who are brought officially and personally into direct contact with them and have the opportunity and the means for studying their modes of life it is believed can best collate the facts regarding their food, what they buy, how much they pay for it, how they cook and eat it, and how in any or all of these respects improvements can be made. Such favorable conditions were secured in these investigations by the cooperation of the New York Association for the Improvement of the Condition of the Poor, one of the oldest and largest benevolent associations in the United States, which had the advantages of large resources, long experience, and close connection with the people in the congested quarters of the city. The selection of the families to be studied and the collection of the various statistics regarding their circumstances and their food consumption devolved upon Dr. Isabelle Delaney, whose long experience in mission work, and

[a] "A study of dietaries." Partial report of Dutton Fellow, College Settlements Association, 1892–93.

[b] Conn. (Storrs) Sta. Rpt. 1896, p. 117.

[c] Diet of Laboring Classes in Edinburgh.

[d] Poverty, a Study of Town Life, p. 222.

[e] U. S. Dept. Agr., Office of Experiment Stations Bul. 46.

especially as the family physician of a very large number of people in the regions referred to, gave her unusual opportunities for understanding the people and their conditions, experiences, and ideas, while her sympathy with them and their confidence in her secured the freest admission to their homes to herself and anyone she brought with her.

In addition to those already reported (see p. 7), studies of thirty-six families were made during 1896 and 1897, the details of which are here given. The families selected represented many nationalities and occupations. The range in total income per family was from an amount not sufficient to buy the actual necessities of life to an amount equal to that upon which families in other communities have been found to live comfortably. In some instances the persons studied were slovenly and thriftless, taking little interest in their homes. Other families, though ignorant, were willing and anxious to learn how to improve their habits of living.

DETAILS OF THE STUDIES HERE REPORTED.

The studies were carried on, and the final results were calculated, according to methods described in detail in previous bulletins.[a] The data sought included (1) the nationality, age, sex, and occupation of the different members of the family and their general physical condition; (2) the income of the family; (3) the expenditures for rent and for food; (4) the kind, quality, and quantity of the food consumed; and (5) the number of meals taken by each person present during the study. From these data and the standard tables showing the composition and fuel value of the different food materials used the quantities of nutrients and energy consumed per man per day were computed. It was then possible, upon comparison with the results of similar studies elsewhere and with recognized standards, to judge whether the families studied were properly nourished, and whether they were wise in their selection and purchase of food; also to point out, in many instances, how a more nutritious diet might have been obtained at the same cost, or one equally nutritious for less.

The results of the thirty-six dietary studies are given in the following pages. The text and the tables for each study contain all the data from which the cost and quantities of nutrients and energy per man per day have been computed. The final figures represent very nearly, if not exactly, the amounts actually consumed, as, although the waste was not determined, in the majority of cases it was observed to be very small, if indeed there was any at all. The circumstances of most of the families positively prohibited their throwing away any edible material.

No analyses were made in connection with these studies. The composition of each of the different food materials used was assumed to

[a] U. S. Dept. Agr., Office of Experiment Stations Bul. 46, and others given in list on cover of this bulletin.

be the same as that given in tables of average composition of food materials.[a] The percentages of nutrients and the fuel values employed for calculating the amounts of nutritive ingredients in these dietaries are given in Table 47 in the Appendix. The numbers in the column headed "Reference number" in this table are the same as those given in parentheses in connection with the weights and cost of the food materials in the table for each dietary study, and thus serve to indicate the data used to calculate the quantities of nutrients in the different materials.

The fuel values of the nutrients were calculated by the use of the same factors as were employed in previous bulletins. Somewhat smaller factors have been proposed recently,[b] but the older factors have been here retained in order that these studies may be directly comparable with those previously reported.

In several instances in the following pages there is given in the discussion of the dietary a table showing the price per pound of the various food materials purchased, the amounts of protein and energy in 1 pound, and the total quantity of each material and of protein and energy that could be obtained for 10 cents at the given price per pound, as well as the total amount expended for each food during the period of study. By the figures in such a table it is possible to form an estimate of the pecuniary economy of the different materials at the prices paid.

DIETARY STUDY OF A GRIPMAN'S FAMILY (NO. 154).

This study was made with a family consisting of the father, the mother, and one child. The father was a strong, healthy man, American born, weighing 230 pounds, and was employed as gripman on a cable car. He was on duty from noon until midnight, and usually took one meal each day away from home. The mother, Italian born, was strong and healthy, and weighed 175 pounds. She was a capable housewife. The boy, 14 years of age, weighed 75 pounds, and was rather delicate. The income of the family was $12 per week, of which $3.50 was taken by the father to pay for his meals away from home. Thirteen dollars a month rent was paid for three rooms, two well-lighted and one on an air shaft. The family was well dressed and carried considerable insurance, but saved nothing otherwise.

The study began June 1, 1896, and continued ten days. The number of meals taken was as follows:

	Meals.
Man	22
Woman (30 meals × 0.8 meal of man), equivalent to	24
Boy, 14 years (30 meals × 0.8 meal of man), equivalent to	24
Total number of meals taken equivalent to	70
Equivalent to one man twenty-three days.	

[a] U. S. Dept. Agr., Office of Experiment Stations Bul. 28.

[b] By the present writers. See Conn. (Storrs) Sta. Rpt. 1899, p. 110.

TABLE 1.—*Weights and cost of food and nutrients in dietary study No. 154.*

Kinds, amounts, and cost of food for ten days.[a]	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
ANIMAL FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Beef: Sirloin, 2.38 pounds, 42 cents (33); bologna, 0.25 pound, 5 cents (1); gelatin, 0.44 pound, 7 cents (15). Veal: Chops, 4.93 pounds, 60 cents (54)	5.0	36	19	.....	324
Pork: Chops, 43 pounds, 4 cents (60); ham, smoked, 5.25 pounds, 63 cents (66)	2.9	16	37	.....	410
Poultry: Chicken, 3.37 pounds, 40 cents (83)	1.7	13	11	.....	155
Fish, etc.: Cod, fresh, 1.69 pounds, 25 cents (90); herrings, smoked, 1 pound, 10 cents (96); oysters, 2.19 pounds, 20 cents (101)	2.4	12	2	1	72
Eggs, 6.34 pounds, 83 cents (115)	3.6	18	13	.....	194
Butter, 2.75 pounds, 47 cents (118)	2.0	1	46	.....	432
Cheese, 1.75 pounds, 25 cents (120)	1.1	9	12	1	153
Milk, 24.02 pounds, 62 cents (124)	2.7	16	19	24	340
Total animal food	21.4	121	159	26	2,080
VEGETABLE FOOD.					
Cereals: Rice, 0.50 pound, 4 cents (130); bread, 14.50 pounds, 64 cents (134); cake, 2.94 pounds, 28 cents (142); macaroni, 2.50 pounds, 15 cents (158)	4.8	37	10	233	1,200
Sugar, 6 pounds, 32 cents (169)	1.4	.....	.....	118	484
Vegetables: Asparagus, 1 pound, 10 cents (174); lettuce, 4.36 pounds, 22 cents (193); onions, 2.51 pounds, 6 cents (1.95); potatoes, 14.20 pounds, 45 cents (204); radishes, 3.24 pounds, 13 cents (208); tomatoes, canned, 13.01 pounds, 51 cents (216)	6.4	12	1	73	357
Fruits: Bananas, 0.69 pound, 5 cents (225); cherries, 0.87 pound, 10 cents (227); strawberries, 2.76 pounds, 25 cents (239)	1.8	1	1	10	54
Total vegetable food	14.4	50	12	434	2,095
Total food	35.8	171	171	460	4,175

[a] The numbers in parentheses after each food material in this and succeeding tables refer to corresponding numbers in Table 47, p. 79.

The diet in this study was unusually large; but, on the other hand, the father and mother were unusually heavy and the man was at rather hard muscular work. Based on the standard of 125 grams of protein and 2,500 calories of energy for a man at moderate work, it would appear that the family had more food than they needed. Taking into account, however, their weight and the occupation of the father, it is probable that they were receiving about what would satisfy the physiological demands of the body.

According to the statistics of the study the food cost about $5.75 per week, or, approximately, half the income. This sum was equivalent to 36 cents per man per day, which, though perhaps not excessive considering the variety of food materials and the quantity of nutrients and energy obtained, was nevertheless larger than was necessary. Yet there was evidently careful management, as is shown by the variety in the food obtained at the price paid and also by the fact that there was no waste, "left-over" pieces being carefully utilized.

The relative economy of the food materials purchased by this family is illustrated by the figures in the following table:

TABLE 2.—*Cost of food materials per pound, and amounts of protein and energy obtained for 10 cents in each, in dietary study No. 154.*

Kind of food material.	Price per pound.	In 1 pound.		Amount bought for 10 cents.			Total amount expended during study.
		Protein.	Fuel value.	Total food.	Protein.	Fuel value.	
	Cents.	*Pound.*	*Calories.*	*Pounds.*	*Pound.*	*Calories.*	*Cents.*
Beef, sirloin	17.6	0.165	985	0.57	0.09	555	42
Veal chops	12.2	.199	825	.82	.16	675	60
Smoked ham	12.0	.142	1,675	.83	.12	1,395	63
Chicken	11.9	.193	1,045	.84	.16	890	40
Fish, fresh (assumed as cod)	14.8	.165	325	.68	.11	215	25
Herring, smoked	10.0	.205	750	1.00	.21	755	10
Oysters	9.1	.060	230	1.10	.07	260	20
Eggs	13.1	.148	720	.76	.11	545	83
Butter	17.1	.010	3,605	.59	.....	2,105	47
Cheese	14.3	.259	1,950	.70	.18	1,360	25
Milk	2.6	.033	325	3.85	.13	1,250	62
Bread	4.4	.092	1,215	2.27	.21	2,745	64
Cake	9.5	.063	1,675	1.05	.07	1,760	28
Macaroni	6.0	.134	1,665	1.67	.22	2,780	15
Sugar	5.3	.....	1,860	1.89	.....	3,485	32
Green vegetables: Asparagus, lettuce, onions, radishes	4.6	.....	.....	2.17	.03	280	51
Potatoes	3.2	.022	385	3.13	.07	1,220	45
Tomatoes, canned	3.9	.012	105	2.55	.03	265	51
Fruits: Bananas, cherries, strawberries	9.3	.....	.....	1.08	.01	280	40

The prices paid for various food materials were, as a rule, very reasonable. Fresh bread at 4.4 cents a pound was cheap, and, together with macaroni at 6 cents a pound, formed by far the most economical source of both protein and energy in the diet. As compared with the protein and energy obtained for the money expended for bread and macaroni, it is interesting to note the amounts obtained in 10 cents' worth of green vegetables, canned tomatoes, and fruits. During the time of the study $1.42 was expended for these latter materials, the amount of nutrients obtained being about the same as in 15 cents' worth of bread. The meats used were the more expensive cuts. Had they bought the cheaper cuts of meat and used less oysters and fewer eggs, the cost of the diet might have been reduced materially. If, in addition, some of the money expended for canned tomatoes, fresh fruit, and green vegetables had been used to purchase more economical food, the diet might have been still further reduced in cost, and at the same time have been equally or more nutritious.

DIETARY STUDY OF A LONGSHOREMAN'S FAMILY (NO. 155).

The family in this study was believed to be typical of a large class living "from hand to mouth," buying food in small quantities as wanted for each meal. The members of the family were the father, the mother, the grandmother, and four boys, aged, respectively, 13, 11, 8, and 3 years. The father, Irish born, was a longshoreman, weighing 160 pounds, and rather quiet in disposition and stolid. His income varied with the amount of work he could get. During the period of study he was earning about $8 per week. The mother, weighing 130 pounds,

was thrifty and hard working. She took care of the halls in the building in which the family lived. For this service she was allowed rooms which would probably have rented for about $13 per month; she also did washing and cleaning when the father was out of work and it was necessary for her to earn money. The grandmother was strong and well and did considerable housework. The boys were small for their age and sickly, and appeared to be insufficiently nourished. The oldest was employed as errand boy and earned $1.50 a week. The family occupied four very small, dark rooms, in only one of which was a window that would admit much light or air, the other three opening upon an air shaft. The dimensions of each of the two bedrooms were 6 by 7 feet.

The study began June 2, 1896, and continued ten days. The number of meals taken was as follows:

	Meals.
Man	30
Two women (60 meals × 0.8 meal of man), equivalent to	48
Two boys, 13 and 11 years (60 meals × 0.6[a] meal of man), equivalent to	36
One boy, 8 years (30 meals × 0.5 meal of man), equivalent to	15
One boy, 3 years (30 meals × 0.4 meal of man), equivalent to	12
Visitor	2
Total number of meals taken equivalent to	143

Equivalent to one man forty-eight days.

TABLE 3.—*Weights and cost of food and nutrients in dietary study No. 155.*

Kinds, amounts, and cost of food for ten days.	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
ANIMAL FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Beef: Steak, chuck, 5 pounds, 48 cents (27); soup, fore shank, 1.51 pounds, 9 cents (23); corned brisket, 9.5 pounds, 60 cents (4); tripe, 5.88 pounds, 30 cents (38); suet, 0.38 pound (37)	3.1	33	31	.....	424
Pork: Ham, boiled, 0.88 pound, 21 cents (64); spare-rib, roast, 5.62 pounds, 53 cents (81); pig's head, 2.06 pounds, 10 cents (70); lard, 0.50 pound, 6 cents (69)	1.8	13	30	.....	332
Fish: Cod, fresh, 6.5 pounds, 28 cents (89)	.6	7	0	.....	29
Eggs, 1 pound, 10 cents (116)	.2	1	1	.....	13
Butter, 3.69 pounds, 73 cents (118)	1.5	0	30	.....	279
Milk, 23.62 pounds, 56 cents (124)	1.2	7	9	11	158
Total animal food	8.4	61	101	11	1,235
VEGETABLE FOOD.					
Cereals: Bread, 7.5 pounds, 39 cents (134); bread, stale, 17 pounds, 26 cents (138)	1.4	24	3	124	634
Sugar: 6.5 pounds, 39 cents (169)	.8	.....	.....	62	254
Vegetables: Beans, string, 2 pounds, 7 cents (177); cabbage, 4.82 pounds, 10 cents (179); cucumbers, 0.87 pound, 5 cents (186); onions, 1.19 pounds, 3 cents (195); potatoes, 31.18 pounds, 55 cents (204); spinach, 2.5 pounds, 8 cents (214)	1.8	9	1	60	292
Total vegetable food	4.0	33	4	246	1,180
Total food	12.4	94	105	257	2,415

[a] This factor was used instead of the more common one because the boys were small for their ages.

The expenditures for food in this dietary were on the whole well made. In spite of the fact that food was purchased in small amounts, and that there was an unnecessary though pleasing variety of vegetables, the cost per man per day was but 12.4 cents. The ration was, however, deficient in protein and especially lacking in energy. Had half the 33 cents expended for fresh vegetables, other than potatoes, been expended for dried beans, and the 39 cents used to purchase fresh bread been spent for "stale" bread (that is, bread a day old but not so old as to be unpalatable or unwholesome) at the price paid for the latter, the ration per man per day would have been increased by 25 grams of protein and 510 calories of energy. While this would have reduced the variety in the diet to some extent it would have perhaps improved the general condition of the children, who seemed insufficiently nourished.

DIETARY STUDY OF A PLUMBER'S FAMILY (NO. 158).

This family consisted of the father, an American, 28 years old, weighing 140 pounds; the mother, 26 years old, weighing 125 pounds; and two daughters, respectively 4 and 2 years old and rather small for their age. The grandfather, aged 74 years, weighing 150 pounds; a great uncle, 75 years old, weighing 160 pounds; and an uncle, 28 years, weighing 135 pounds, also lived with them. The father, a steamfitter's helper, was a strong, healthy man, but was idle at the time and did not seem anxious to work. His wife was thrifty and neat and a good manager. She and the two children appeared to be poorly nourished. The grandfather was in good health but without ambition. The great uncle earned his pocket money but contributed nothing to his support. The uncle, who was a plumber, paid $5 a week for support of himself and the great uncle. He took his dinners away from home. The family occupied three rear rooms, for which they paid $8.50 a month rent. One room was lighted from the rear yard, the other two opened on a hall and an air shaft. Two beds and a lounge served as sleeping quarters for the seven people. They lived in the easiest manner possible, set no table, bought their food by the meal, cooked it in the simplest manner, sat out of doors until late at night, and slept late in the morning. The food purchased was of poor quality, the milk being especially so.

The study began July 21, 1896, and continued ten days. The number of meals taken was as follows:

	Meals.
Men (four)	111
Woman (29 meals × 0.8 meal of man), equivalent to	23
Two children, 4 and 2 years (60 meals × 0.4 meal of man), equivalent to	24
Total number of meals taken equivalent to	158

Equivalent to one man fifty-three days.

TABLE 4.—*Weights and cost of food and nutrients in dietary study No. 158.*

Kinds, amounts, and cost of food for ten days.	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
ANIMAL FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Beef: Brisket, corned, 6.31 pounds, 39 cents (4); steak, chuck, 1.50 pounds, 15 cents (27); steak, round, 2 pounds, 22 cents (29); tripe, 1 pound, 6 cents (39). Mutton: Shoulder, 1.75 pounds, 8 cents (50); breast, 0.80 pound, 8 cents (40)	1.9	21	22	.....	291
Pork: Chops, 0.80 pound, 10 cents (60); shoulder, smoked, 5.25 pounds, 43 cents (79); bacon, 2 pounds, 22 cents (59); lard, 0.13 pound, 2 cents (69)	1.5	8	26	.....	275
Fish: Clams, 1 pound, 10 cents (85)	.2	1	.....	1	8
Eggs, 3.34 pounds, 40 cents (114)	.7	4	3	.....	45
Butter, 2.75 pounds, 56 cents (118)	1.0	.....	20	.....	186
Milk, 16.92 pounds, 47 cents (124)	.9	5	6	7	105
Total animal food	6.2	39	77	8	910
VEGETABLE FOOD.					
Cereals: Bread, 20.56 pounds, 54 cents (138); cake, 1 pound, 10 cents (142)	1.2	20	3	100	520
Sugar, 7.75 pounds, 46 cents (169)	.9	.....	.....	66	270
Vegetables: Cabbage, 3.69 pounds, 9 cents (179); corn, 2.25 pounds, 8 cents (184); onions, 1.07 pounds, 4 cents (195); potatoes, 19.43 pounds, 32 cents (204); tomatoes, fresh, 5 pounds, 10 cents (215); tomatoes, canned, 2 pounds, 7 cents (216)	1.3	5	1	39	190
Total vegetable food	3.4	25	4	205	980
Total food	9.6	64	81	213	1,890

The amounts of protein and energy per man per day in this dietary were but little more than half of what is called for by the ordinary standard for a man at moderate work. Although the father was out of work at the time, and therefore required less food than if he had been actively employed, and two of the other men in the family did no work, still if the results given represent the average food consumption of the family it is not surprising that some of them appeared to be undernourished.

Considerable improvement in the nutritive value of the diet could have been made by diminishing the amounts of some of the foods selected and the substitution of others not used at all. For instance, animal foods were purchased in larger amounts and greater variety than was necessary, over three-fifths of the total expenditure having been for such materials, while but about one-eighth was for the cereals, which constitute the most economical source of nutriment ordinarily obtainable. They used no legumes, and no oatmeal, wheat, or other cereal foods, except bread and cake. The cabbage, corn, onions, and tomatoes cost more than the potatoes used, though they furnished less than half as much protein, and but little more than quarter the energy obtained in the potatoes. Had half of the $2.15 expended for meat, fish, and eggs been expended for bread, corn meal, oatmeal, dried beans and peas, and the like, the quantity of nutrients in the diet

would have been greatly increased, while the cost would have remained the same. With proper cooking, the diet thus modified would doubtless have been no less attractive than the usual fare.

DIETARY STUDY OF A WASHERWOMAN'S FAMILY (NO. 159).

The members of the family here studied were the mother, 38 years of age, and six children—four girls, aged respectively 17, 14, 5, and 3 years, and two boys, aged respectively 10 and 7 years. The weights of all except the two younger girls were respectively 130, 140, 125, 85, and 65 pounds. The mother, English born, was refined and intelligent, her first husband having been a clergyman; her second marriage, however, had been unfortunate. The members of the family were not strong and found it difficult to obtain sufficient food for proper nourishment. The mother endeavored to support the family by washing and by house cleaning. A daughter, not living at home, contributed $5 a month toward the rent. A sailor, 19 years old, weighing 150 pounds, boarded with the family during three days of the study, paying $2.15. Provisions were bought for cash by the meal at small markets. There was no visible waste and but very little refuse. The family occupied three well-lighted rooms for which they paid $10 a month. The rent was low for the locality, owing to the fact that the building was notorious for crimes that had been committed in it, and the rooms were not in demand.

The study began July 21, 1896, and continued ten days. Three of the children went to the country before the close of the study. The number of meals taken was as follows:

	Meals.
Woman (30 meals × 0.8 meal of man), equivalent to	24
Two girls, 17 and 14 years old (19 meals × 0.7 meal of man), equivalent to	13
Boy, 10 years old (30 meals × 0.6 meal of man), equivalent to	18
Boy, 7 years old (28 meals × 0.5 meal of man), equivalent to	14
Two girls, 5 and 3 years old (30 meals × 0.4 meal of man), equivalent to	12
Boarder	7
Visitor	2
Total number of meals taken equivalent to	90

Equivalent to one man thirty days.

TABLE 5.—*Weights and cost of food and nutrients in dietary study No. 159.*

Kinds, amounts, and cost of food for ten days.	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
ANIMAL FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Beef: Liver, 2 pounds, 14 cents (18); sausage, bologna, 0.25 pound, 5 cents (1); shank, fore, 3 pounds, 20 cents (23); steak, round, 2 pounds, 24 cents (29); steak, skirt, 2 pounds, 14 cents (35); steak, sirloin, 1 pound, 12 cents (33)	3.0	26	17	.....	270
Pork: Bacon, 1 pound, 12 cents (59); chops, 2.5 pounds, 20 cents (61)	1.1	6	19	.....	200
Fish: Fresh mackerel, 3 pounds, 15 cents (97); canned salmon, 2 pounds, 40 cents (104)	1.8	11	4	.....	80
Eggs, 0.32 pound, 5 cents (114)	.2	1	1	.....	15
Butter, 1 pound, 20 cents (118)	.6	.....	13	.....	120
Milk, 11.83 pounds, 36 cents (124)	1.2	6	7	9	125
Milk, condensed, 2.5 pounds, 22 cents (125)	.7	3	3	20	125
Total animal food	8.6	53	64	29	935
VEGETABLE FOOD.					
Cereals: Flour, 1 pound, 5 cents (131); oatmeal, 3.51 pounds, 8 cents (128); bread, rye, 6 pounds, 17 cents (136); bread, wheat, 17.15 pounds, 36 cents (138); soda biscuit, 2.5 pounds, 25 cents (139); cakes, 1 pound, 10 cents (142); crackers, 6 pounds, 26 cents (153); apple pie, 0.25 pound, 10 cents (160)	4.6	60	26	329	1,835
Sugar, 4 pounds, 22 cents (169)	.7	.....	.....	61	250
Vegetables: Canned corn, 2 pounds, 9 cents (185); onions, 1 pound, 4 cents (195); potatoes, 7.9 pounds, 15 cents (204); radishes, 0.25 pound, 2 cents (209); tomatoes, 3 pounds, 6 cents (215); canned tomatoes, 4 pounds, 12 cents (216)	1.6	5	1	33	165
Fruit: Apples, 2 pounds, 7 cents (221); currants, 2 pounds, 7 cents (228); pears, 2 pounds, 10 cents (236)	.8	1	.....	11	50
Total vegetable food	7.7	66	27	434	2,300
Total food	16.3	119	91	463	3,235

The results of this study may be taken as a typical illustration of the fact that a varied and nutritious diet can be obtained at a comparatively small cost. The quantities of protein and energy per man per day in the ration were not greatly below the standard, and, considering the cost of the food, 16.3 cents, perhaps the ration could not be much improved upon. There was a considerable variety of animal food, the greatest expenditure for any one item being for canned salmon, which, it is interesting to note, furnished less nutriment than was obtained in the fore shank of beef for half as much money. Cereal foods were purchased in considerable variety and quantity. There was also a variety in the vegetables and fruits, though no sort was used in large amounts. By reducing the variety of vegetables and fruits the cost of the ration could have been still further reduced without materially diminishing its nutritive value. If sufficient care were taken in cooking, the less expensive diet could be made about as attractive as that costing more.

DIETARY STUDY OF A TRUCKMAN'S FAMILY (NO. 160).

This study was carried on in a family somewhat above the average in intelligence and thrift for the vicinity. It included the father, Amer-

ican born, of Scotch-Irish descent, 29 years old; the mother, 24 years old, and three children—a boy of 5, a girl of 3, and an infant of 1½ years of age, all of whom were in good health. They weighed 165, 138, 45, and 35 pounds, respectively, the weight of the infant not being ascertained. The father, a truckman, earned $14 a week. The family dressed neatly, and made a good appearance. They occupied two large, well-lighted rooms, for which $10 a month rent was paid. The rooms were furnished very simply, but were kept very neat and clean. Food was purchased for cash at the large or small markets, according to the nature of the material. Ice was used, and food was well cared for. There was practically no waste. The woman was thrifty, and though not an expert cook, was bright, and eager to learn how to improve the character of the diet. She had already profited much from lessons in domestic management given by one of the prominent local charitable organizations.

The study began October 20, 1896, and continued ten days. The number of meals taken was as follows:

	Meals.
Man	26
Woman (30 meals × 0.8 meal of man), equivalent to	24
Two children, 5 and 3 years old (46 meals × 0.4 meal of man), equivalent to	18
Infant, 1½ years old, equivalent to	9
Total number of meals taken equivalent to	77

Equivalent to one man twenty-six days.

TABLE 6.—*Weights and cost of food and nutrients in dietary study No. 160.*

Kinds, amounts, and cost of food for ten days.	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
ANIMAL FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Beef: Round steak, 3 pounds, 48 cents (29); fore shank, 4 pounds, 28 cents (23); plate, corned, 3.25 pounds, 20 cents (7). Mutton: Leg, 4.26 pounds, 96 cents (43); chops, 1 pound, 14 cents (44)	7.9	42	49	.....	628
Pork: Sparerib, 2.06 pounds, 17 cents (81)	.7	6	11	.....	127
Fish: Mackerel, salt, 1.63 pounds, 17 cents (99); salmon, canned, 0.50 pound, 18 cents (105)	1.3	7	6	.....	84
Butter, 3.13 pounds, 52 cents (118)	2.0	1	46	.....	432
Milk, 6 pounds, 12 cents (124)	.5	3	4	5	70
Milk, condensed, 3.25 pounds, 23 cents (125)	.9	5	5	31	194
Total animal food	13.3	64	121	36	1,535
VEGETABLE FOOD.					
Cereals: Oatmeal, 1.75 pounds, 8 cents (129); macaroni, 1 pound, 10 cents (158); bread, 10 pounds, 50 cents (134); biscuit, 2.25 pounds, 10 cents (139); buns, 7 pounds, 29 cents (140); cake, coffee, 2 pounds, 20 cents (143)	4.9	39	21	234	1,315
Sugar, 2.5 pounds, 15 cents (169)	.6	.....	.....	44	181
Vegetables: Cabbage, 8 pounds, 12 cents (179); onions, 0.56 pound, 2 cents (195); peas, dry, 2 pounds, 6 cents (200); potatoes, 10.69 pounds, 24 cents (204); corn, canned, 1 pound, 10 cents (185); peas, canned, 1 pound, 10 cents (199); tomatoes, canned, 2 pounds, 9 cents (216)	2.8	17	2	71	380
Fruit: Jelly, currant, 1 pound, 10 cents (232)	.3	.....	1	12	59
Total vegetable food	8.6	56	24	361	1,935
Total food	21.9	120	145	397	3,470

The results of this dietary study indicate that the family were obtaining about the normal quantity of protein and energy in their daily food. The cost of the ration—22 cents per man per day—was not excessive, although it might easily have been reduced. The expenditure of 96 cents for a leg of lamb secured but little more than half the protein and much less than half the fat that was obtained for a similar amount expended for cheap cuts of beef. Cereal products were used in considerable variety. The price of the bread—5 cents per pound—was higher than that paid by a number of the families studied. If food had been bought in larger quantities, and a portion of the money expended for meat had been used to increase the quantity of cereals, the nutritive value of the ration would have been increased with little or no diminution of its variety and palatability. The variety of vegetables might perhaps also have been reduced and only the more economical kinds purchased without decreasing appreciably the palatability of the ration.

DIETARY STUDY OF A WASHERWOMAN'S FAMILY (NO. 161).

This study was carried on with the same family as in study No. 159, after the return of the children from an outing in the country. The income during the study was $5.

The study began August 6, 1896, and continued ten days. The number of meals taken was as follows:

	Meals.
Woman (30 meals × 0.8 meal of man), equivalent to	24
Girl, 17 years old (30 meals × 0.7 meal of man), equivalent to	21
Boy, 10 years old (30 meals × 0.6 meal of man), equivalent to	18
Boy, 7 years old (30 meals × 0.5 meal of man), equivalent to	15
Two girls, 5 and 3 years old (60 meals × 0.4 meal of man), equivalent to	24
Total number of meals taken equivalent to	102

Equivalent to one man thirty-four days.

TABLE 7.—*Weights and cost of food and nutrients in dietary study No. 161.*

Kinds, amounts, and cost of food for ten days.	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
ANIMAL FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Beef: Flank, 1.50 pounds, 12 cents (35); fore shank, 2.50 pounds, 14 cents (23); corned, canned, 1 pound, 20 cents (6). Lamb: Chops, 1.31 pounds, 18 cents (41); chops, mutton, 0.81 pound, 15 cents (45)	2.3	16	17	.....	224
Pork: Chops, 2.24 pounds, 25 cents (60); salt, 4 pounds, 28 cents (72)	1.6	6	55	.....	536
Fish: Salmon, canned, 0.50 pound, 10 cents (105); sardines, 1.50 pounds, 9 cents (107)	.6	6	3	.....	53
Eggs, 0.13 pound, 2 cents (117)	(a)	(a)	(a)	.....	(a)
Butter, 2.74 pounds, 51 cents (118)	1.5	1	31	.....	293
Milk, 18.70 pounds, 51 cents (124)	1.5	8	10	13	179
Milk, condensed, 4.25 pounds, 31 cents (125)	.9	5	5	30	190
Total animal food	8.4	42	121	43	1,475

a Amounts too small to affect results.

TABLE 7.—*Weights and cost of food and nutrients in dietary study No. 161*—Continued.

Kinds, amounts, and cost of food for ten days.	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
VEGETABLE FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Cereals: Oatmeal, 3.50 pounds, 8 cents (128); bread, 20 pounds, 52 cents (138); bread, rye, 4 pounds, 12 cents (136); biscuit, soda, 6 pounds, 20 cents (139); crackers, soda, 3 pounds, 14 cents (156); cakes, mixed, 1 pound, 5 cents (142); pie, apple, 0.25 pound, 5 cents (160)	3.4	54	23	284	1,599
Sugar, 6 pounds, 33 cents (169)	1.0	.....	.....	80	328
Vegetables: Beans, string, 1 pound, 5 cents (178); cabbage, 3 pounds, 5 cents (179); corn, canned, 1 pound, 5 cents (185); onions, 0.50 pound, 2 cents (195); potatoes, 11.23 pounds, 22 cents (204); tomatoes, 2.50 pounds, 5 cents (215)	1.4	5	1	35	173
Fruits: Bananas, 0.94 pound, 7 cents (226); currants, fresh, 1 pound, 3 cents (228); muskmelon, 0.50 pound, 3 cents (234)	.3	.....	.....	4	15
Total vegetable food	6.1	59	24	403	2,115
Total food	14.5	101	145	446	3,590

This study shows, as did the earlier one with the same family, unusually careful management of the household expenses. The variety of the food was considerable, and the quantity of nutrients obtained per man per day as large as has been found in many studies of farmers, mechanics, and other workingmen in the United States, though the cost was less than 15 cents per day. This is an instance of what can be done by careful management.

The following table, showing the amounts of protein and energy purchased for 10 cents in some of the more important food materials used by this family, illustrates the relative economy of their purchases:

TABLE 8.—*Cost of food materials per pound, and amounts of nutrients and energy obtained for 10 cents in each, in dietary study No. 161.*

Kind of food material.	Price per pound.	In 1 pound.		Amounts bought for 10 cents.			Total amount expended during study.
		Protein.	Fuel value.	Total food.	Protein.	Fuel value.	
	Cents.	*Pound.*	*Calories.*	*Pounds.*	*Pound.*	*Calories.*	*Cents.*
Beef:							
Flank	8.0	0.170	1,115	1.25	0.21	1,460	12
Fore shank	5.6	.128	545	1.79	.22	975	14
Corned, canned	20.0	.263	1,280	.50	.14	560	20
Lamb chops	13.7	.187	1,540	.73	.14	1,120	18
Do	18.5	.160	1,695	.54	.09	915	15
Pork:							
Chops, edible portion	11.2	.166	1,580	.90	.15	1,410	25
Salt	7.0	.019	3,670	1.43	.03	5,250	28
Salmon, canned	20.0	.218	915	.50	.11	450	10
Sardines	6.0	.237	950	1.67	.39	1,580	9
Butter	18.6	.010	3,605	.54	.....	1,935	51
Milk	2.7	.033	325	3.70	.12	1,180	51
Milk, condensed	7.3	.088	1,520	1.37	.12	2,090	31
Oatmeal	2.3	.161	1,860	4.35	.70	8,135	8
Bread:							
Wheat	2.6	.109	1,215	3.85	.42	4,820	52
Rye	3.0	.090	1,180	3.33	.30	3,940	12
Biscuits, soda	3.3	.093	1,730	3.00	.28	5,185	20
Crackers, soda	4.7	.098	1,925	2.14	.21	4,130	14
Cakes, mixed	5.0	.005	1,675	2.00	.13	3,365	5
Pie, apple	20.0	.005	1,270	.50	.02	640	5
Sugar	5.5	.....	1,860	1.82	.....	3,380	33
Green vegetables: String beans, cabbage, onions, and tomatoes	2.4	.....	.....	4.17	.06	575	17
Potatoes	2.0	.022	385	5.00	.11	1,975	22
Fruit: Bananas, currants, muskmelons	5.3	.....	.....	1.88	.02	495	13

The canned corned beef at 20 cents a pound was very high priced, and the lamb chops at 18½ cents, though more economical than the corned beef, were also high. The most economical food material was oatmeal, which was purchased at 2.3 cents per pound, while stale bread at 2.6 cents per pound was also very economical and was purchased in considerable amounts. The amount spent for green vegetables and fruit was perhaps no larger than health demanded. It is interesting to compare the quantities of protein and energy obtained for 10 cents by this family with corresponding amounts in dietary study No. 154 (p. 10).

DIETARY STUDY OF A LONGSHOREMAN'S FAMILY (NO. 162).

The family consisted of the husband, a German, 33 years old, weighing 155 pounds; the mother, a Scotch woman, 35 years old, weighing 130 pounds; two sons of the latter, one 19 years old, weighing 125 pounds, the other 12 years of age, and a woman boarder 18 years old. The weights of the younger son and the boarder were not ascertained. The income of the family was larger than most of those studied. The father earned from $18 to $25 a week at his work as longshoreman, and the mother about $5 a week selling papers. The older son was apprenticed to a printer and earned $3 a week. The boarder was out of work at the time of the study and was seeking employment, meanwhile her board remained in arrears. The family occupied three rooms, paying $8.50 a month rent. They dressed well and had a considerable sum of money laid by. About the only form of recreation in the warm weather was an occasional day at some seaside resort. Food was purchased in small quantities, although ice was used continually.

The study began August 6, 1896, and continued ten days. The number of meals taken was as follows:

	Meals.
Two men	60
Two women (60 meals × 0.8 meal of man), equivalent to	48
Boy, 12 years old (30 meals × 0.6 meal of man), equivalent to	18
Total number of meals taken equivalent to	126

Equivalent to one man forty-two days.

TABLE 9.—*Weights and cost of food and nutrients in dietary study No. 162.*

Kinds, amounts, and cost of food for ten days.	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
ANIMAL FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Beef: Round steak, 6 pounds, 70 cents (29); sirloin steak, 1.50 pounds, 23 cents (33). Veal: Breast, 4.12 pounds, 35 cents (53)	3.0	23	17	.....	253
Pork: Ham, smoked, 5.13 pounds, 64 cents (66); bacon, 0.38 pound, 5 cents (59)	1.7	8	21	.....	228
Fish: Bluefish, fresh, 3.51 pounds, 25 cents (84); codfish, fresh, 3.51 pounds, 24 cents (89); sturgeon, 37 pounds, 10 cents (111)	1.4	9	.....	.....	37
Eggs, 5.73 pounds, 82 cents (114)	1.9	8	7	.....	98
Butter, 4 pounds, 75 cents (118)	1.8	1	37	.....	348
Cheese, 1.38 pounds, 31 cents (120)	1.0	5	6	.....	76
Cheese, limburger, 0.37 pound, 10 cents (123)	(a)	(a)	(a)	(a)	(a)
Milk, 8.39 pounds, 23 cents (124)	.5	3	4	5	70
Milk, condensed, 3 pounds, 24 cents (125)	.6	3	3	17	110
Total animal food	11.9	60	95	22	1,220
VEGETABLE FOOD.					
Cereals: Bread, 25.87 pounds, 97 cents (134); cake, coffee, 1.50 pounds, 10 cents (143)	2.6	27	5	159	809
Sugar, 4 pounds, 18 cents (169)	.4	.....	.....	43	176
Vegetables: Cabbage, 10 pounds, 18 cents (179); potatoes, 24 pounds, 40 cents (204); tomatoes, 6.50 pounds, 14 cents (215); turnips, 2.37 pounds, 5 cents (218)	1.8	8	.....	59	275
Total vegetable food	4.8	35	5	261	1,260
Total food	16.7	95	100	283	2,480

(a) Amounts too small to affect results.

The quantity of nutrients and energy per man per day obtained by this family seems small in view of the fairly severe work of the father. The income was large enough to warrant a more liberal diet, and there was no apparent reason why the family should not be well nourished, so it may be that the diet was sufficient for their needs. The cost was moderate, especially considering the relatively large proportion of protein as compared with the energy. Had the amount expended for cereal food been doubled and expended as judiciously as in the previous dietary study, the quantity of protein per man per day could have been increased to about 135 grams and the energy to 3,650 calories, although the total cost would have been but 19.3 cents.

DIETARY STUDY OF A CARPENTER'S FAMILY (NO. 166).

This study was with the same family as that in dietary study No. 31, the details of which have been published in a former report.[a] They were at this time in rather better circumstances than at the time the first study was made. The members of the family were all German born, and comprised the father 47 and the mother 37 years of age, and three children—a boy of 18, a girl of 14, and a boy of 11 years. All

[a] U. S. Dept. Agr., Office of Experiment Stations Bul. 46.

were apparently in excellent health, and weighed, respectively, 157, 192, 150, 143, and 83 pounds. The father was a carpenter and earned $10 a week when he had steady work. The mother acted as housekeeper or janitor in the building in which they lived and received in payment for her services the rent of four rooms, worth about $12 a month. The older son was employed by an electrician and earned $7 a week; he spent 15 cents a day for his lunch. The daughter earned $3 a week as salesgirl; the younger boy went to school. The food purchased was of good quality and there was no avoidable waste.

The study began September 3, 1896, and continued ten days. The number of meals taken was as follows:

	Meals.
Two men[a]	55
Woman (30 meals × 0.8 meal of man), equivalent to	24
Girl, 14 years old (30 meals × 0.7 meal of man), equivalent to	21
Boy, 11 years old (30 meals × 0.6 meal of man), equivalent to	18
Total number of meals taken equivalent to	118

Equivalent to one man thirty-nine days.

TABLE 10.—*Weights and cost of food and nutrients in dietary study No. 166.*

Kinds, amounts, and cost of food for ten days.	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
ANIMAL FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Beef: Steak, chuck, 1.75 pounds, 15 cents (27); steak, round, 9.50 pounds, 95 cents (29); steak, round, chopped, 1.25 pounds, 20 cents (31); steak, sirloin, 0.75 pound, 15 cents (33); fore shank, 4 pounds, 23 cents (23); liver sausage, 0.50 pound, 10 cents (19)	4.6	36	23	.....	361
Pork: Loin, 3.75 pounds, 38 cents (61); ham, 0.75 pound, 15 cents (66); lard, 1.50 pounds, 12 cents (69)	1.6	7	31	.....	317
Eggs, 4.94 pounds, 75 cents (114)	1.9	9	6	.....	92
Butter, 3 pounds, 62 cents (118)	1.6	.....	30	.....	279
Milk, 53.25 pounds, $1.36 (124)	3.5	20	25	31	441
Total animal food	13.2	72	115	31	1,490
VEGETABLE FOOD.					
Cereals: Flour, 11.50 pounds, 37 cents (131); bread, 14.25 pounds, 57 cents (134); rolls, Vienna, 1 pound, 5 cents (165); doughnuts, 6 pounds, 30 cents (157)	3.3	36	18	232	1,267
Sugar, 7 pounds, 38 cents (169)	1.0	.....	.....	81	332
Vegetables: Beans, 2 pounds, 10 cents (175); cabbage, 5 pounds, 7 cents (179); corn, 1.50 pounds, 5 cents, (184); onions, 1 pound, 3 cents (195); potatoes, 35.69 pounds, 45 cents (204); salad, 3 pounds, 7 cents (211); sauerkraut, 2 pounds, 12 cents (212); soup greens, 1.94 pounds, 15 cents (189); tomatoes, 6 pounds, 11 cents (215)	3.0	18	2	104	519
Fruits: Apples, 3.25 pounds, 8 cents (222)	.2	.....	.....	4	17
Total vegetable food	7.5	54	20	421	2,135
Total food	20.7	126	135	452	3,625

[a] As the meal taken away from home by the young man was only a lunch, it was assumed that he was absent from home for only 5 meals, rather than 10, and would eat at the other meals at home sufficient to make up the difference.

The results obtained in this study indicate that the family was receiving ample nourishment, perhaps a little more than was absolutely necessary; the cost, however, was not excessive. In the previous study of this same family they consumed 148 grams of protein and 3,825 calories of energy per man per day, quantities considerably in excess of those here found. The cost of the diet in the previous study was 23 cents per man per day as compared with 20.7 in this. In the discussion of the earlier study it was pointed out that a reduction in the food might easily have been made, and that such a change would probably not be a disadvantage. A still further reduction in cost might have been made in the present dietary, while still keeping its nutritive value equally high, by a wiser selection of vegetables. One of the highest priced of the articles of animal food purchased was sirloin steak, but the 15 cents thus expended furnished very much more nutriment than was obtained for the same sum expended for soup greens.

DIETARY STUDY OF A CARPENTER'S FAMILY (NO. 167).

The family consisted of the father, German born, 47 years of age; the mother, also German, 52 years of age; and four sons, aged respectively 20, 19, 15, and 7 years. The weights of the members of the family were respectively 220, 180, 120, 110, 75, and 47 pounds. The father was a carpenter and usually had steady work. At the time of the study he was recovering from an illness, and received $6 a week from a benefit organization. The oldest son was a janitor in a clubhouse, the second son was a glassworker; neither earned large wages, yet each paid $4 a week board. These two boys got their lunches each working day away from home. Since these were only light meals, it has been assumed that each one was present at 25 full meals during the study. The third son was learning the printer's trade; he paid $2.75 a week toward his support. The mother was well trained in household management. The table was neat and inviting, the food well prepared, and there was little or no waste. The rent of the four well-lighted rooms occupied was $6 per month. The rooms were comfortably furnished, and the family dressed better than was to be expected from their income.

The study began September 2, 1896, and continued ten days. The number of meals taken was as follows:

	Meals.
Three men	80
Woman (30 meals × 0.8 meal of man), equivalent to	24
Boy, 15 years old (30 meals × 0.8 meal of man), equivalent to	24
Boy, 7 years old (30 meals × 0.5 meal of man), equivalent to	15
Total number of meals taken equivalent to	143

Equivalent to one man forty-eight days.

TABLE 11.—*Weights and cost of food and nutrients in dietary study No. 167.*

Kinds, amounts, and cost of food for ten days.	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
ANIMAL FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Beef: Round steak, 3 pounds, 40 cents (29); steak, chopped, 3 pounds, 30 cents (31); loin, 2.50 pounds, 20 cents (34); shoulder, corned, edible portion, 4.50 pounds, 40 cents (5); suet, 0.12 pound (37). Veal: Leg, 4 pounds, 36 cents (56)	3.5	34	28	.....	400
Pork: Shoulder, smoked, 3.25 pounds, 23 cents (79); salt pork, 1 pound, 6 cents (72)	.6	4	16	.....	165
Fish: Cod, dry, 0.88 pound, 7 cents (91); mackerel, fresh, 3 pounds, 16 cents (98)	.5	5	1	.....	30
Eggs, 5.65 pounds, 70 cents (114)	1.5	7	6	.....	85
Butter, 1.50 pounds, 33 cents (118)	.7	.....	12	.....	110
Milk, 6.12 pounds, 15 cents (124)	.3	2	2	3	40
Milk, condensed, 3 pounds, 27 cents (125)	.5	3	2	15	95
Total animal food	7.6	55	67	18	925
VEGETABLE FOOD.					
Cereals: Flour, 1.50 pounds, 5 cents (131); farina, 1 pound, 4 cents (127); bread, 4.50 pounds, 19 cents (134); bread, rye, 5.44 pounds, 25 cents (136); sugar buns, 7.13 pounds, 35 cents (140); sweet buns, 7.75 pounds, 35 cents (141); rolls, 0.75 pound, 5 cents (166).	2.7	23	10	145	782
Sugar, 5 pounds, 29 cents (179)	.6	.....	.....	47	193
Vegetables: Cabbage, 4.13 pounds, 5 cents (179); corn, green, 0.50 pound, 5 cents (184); greens, 0.19 pound, 1 cent (188); onions, 1.19 pounds, 3 cents (195); potatoes, 40.49 pounds, 51 cents (204); tomatoes, 17 pounds, 22 cents (215)	1.8	11	1	81	385
Fruit: Bananas, 0.17 pound, 2 cents (225); grapes, 3.50 pounds, 10 cents (230)	.2	.....	.....	5	20
Total vegetable food	5.3	34	11	278	1,380
Total food	12.9	89	78	296	2,305

The cost of food per man per day in this study was very small, amounting to but 13 cents. On the other hand, the ration was scanty, even taking into account the fact that the father was recovering from sickness at the time and doubtless ate considerably less food than when at active work. One of the most expensive purchases as regards the nutritive return was tomatoes. Twenty-two cents expended for this vegetable furnished about three-quarters of the protein and energy obtained for 5 cents in wheat flour. Nevertheless, evidence of careful management is marked throughout the study. Meats were purchased in large amounts and considerable variety, but the cost was moderate. It must be remembered, however, that, generally speaking, the meats are a much more expensive source of nourishment than the cereals. The variety and quantity of cereals used was large. The quantity of nutrients might easily have been considerably increased, with but little or no increase in the cost of the diet, by the purchase of more cereals and less meat.

DIETARY STUDY OF A HOUSEKEEPER'S FAMILY (NO. 168).

This family consisted of the mother, 55 years of age, weighing 130 pounds; her three daughters, one 22, one 20, and the other 14 years old, and weighing 140, 130, and 98 pounds, respectively, and one son, 17 years of age, weighing 120 pounds. The mother and three oldest children

were born in Ireland. All were in excellent health and all were wage-earners. The rent of the rooms occupied was $15 a month. Of this the mother paid $9 a month by her work as housekeeper or janitor. One room was let for $1.50 a week. The total income from the children amounted to $20 a week, which was all turned into the family treasury. Each one carried a lunch from home and spent 5 cents daily for tea or coffee. The home was kept neat and clean and the table was attractive. The family dressed well and appeared to be in good circumstances. No member of the family was familiar with cooking, and all of the pastry was purchased of a baker; the girls, however, were anxious to learn how to cook.

The study began September 20, 1896, and continued ten days. The number of meals taken was as follows:

	Meals.
Three women (90 meals × 0.8 meal of man), equivalent to	72
Boy, 17 years old (30 meals × 0.8 meal of man), equivalent to	24
Girl, 14 years old (30 meals × 0.7 meal of man), equivalent to	21
Woman visitor (4 meals × 0.8 meal of man), equivalent to	3
Man visitor	4
Total number of meals taken equivalent to	124

Equivalent to one man forty-one days.

TABLE 12.—*Weights and cost of food and nutrients in dietary study No. 168.*

Kinds, amounts, and cost of food for ten days.	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
ANIMAL FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Beef: Steak, chuck, 1.50 pounds, 15 cents (27); steak, sirloin, 3.50 pounds, 56 cents (33); corned rump, 6 pounds, 60 cents (10); stew meat, 2 pounds, 13 cents (23). Mutton: Chops, 3 pounds, 36 cents (46); chops, 2 pounds, 24 cents (44); leg, 8.50 pounds, $1.10 (47)	7.7	47	55	.....	704
Pork: Ham, smoked, 9 pounds, $1.20 (65); bacon, 3.50 pounds, 34 cents (59)	3.7	20	63	.....	668
Fish: Cod, salt, 3 pounds, 24 cents (91)	.6	6	.....	.....	24
Eggs, 1.69 pounds, 28 cents (114)	.7	3	2	.....	30
Butter, 4.50 pounds, $1.05 (118)	2.6	1	42	.....	394
Milk, 17.07 pounds, 63 cents (124)	1.5	6	8	10	140
Total animal food	16.8	83	170	10	1,960
VEGETABLE FOOD.					
Cereals: Biscuit, 6.94 pounds, 35 cents (139); bread, 10.78 pounds, 48 cents (134); coffee cake, 7.81 pounds, 50 cents (144); corn cake, 2.19 pounds, 10 cents (150); currant loaf, 1.25 pounds, 10 cents (147); doughnuts, 3.50 pounds, 15 cents (157); jelly cake, 0.49 pound, 10 cents (146); rolls, milk, 1 pound, 5 cents (163); rolls, water, 6.69 pounds, 35 cents (166); sweet cake, 0.75 pound, 10 cents (148)	5.6	39	33	245	1,471
Sugars, starches, etc.: Sugar, 9.99 pounds, 48 cents (169); cocoa, 0.50 pound, 20 cents (171)	1.6	1	1	113	476
Vegetables: Cabbage, 4 pounds, 10 cents (179); corn, canned, 1 pound, 6 cents (185); potatoes, 23.94 pounds, 30 cents (204); tomatoes, 1.76 pounds, 3 cents (215); tomato catsup, 2.50 pounds, 28 cents (217)	1.9	7	1	57	272
Fruits: Apples, 11.36 pounds, 20 cents (222); lemons, 1 pound, 5 cents (233); prunes, 0.75 pound, 10 cents (237)	.8	1	1	25	116
Total vegetable food	9.9	48	36	440	2,335
Total food	26.7	131	206	450	4,295

The results of this study are interesting. Although the family consisted of women and one 17-year-old boy, the average daily diet furnished more than eighth-tenths as much as the commonly accepted standard requires for a man at moderate labor. Judged by the standard, therefore, they ate more than they actually required. If the quantity of protein had been reduced a tenth and the quantity of energy a fifth, the ration would have been still as large as is needed theoretically. The fact that the excess of energy was larger than that of protein indicates that the fats and carbohydrates were in excess. One reason for this is found in the large amount of pork eaten. The quantity of bread and pastry was also large. All such food was purchased of a baker, and its cost was much greater than would have been the case had it been made at home. The amount of cake purchased was quite large, and cost considerably more than the bread eaten. One of the least economical purchases was 2½ pounds of tomato catsup, which cost 28 cents and contained almost no nutriment. If the $1.20 expended for smoked ham had been used to purchase dried legumes or some of the leaner cuts of beef, the nutritive ratio of the diet would have been improved. During the study $1.80 was expended for tea and coffee. This sum has not been included in the cost of the food. The income of the family was sufficient to maintain them comfortably, and they apparently made very good use of it.

DIETARY STUDY OF A CARETAKER'S FAMILY (NO. 170).

This family is typical of a large number in this region, in which the woman is the breadwinner. It consisted of the mother, 25 years old; her mother, 65 years old and her sister, 17 years old; a child 6 and one 3 years old, weighing 160, 130, 127, 35, and 30 pounds, respectively, and apparently in good health. The mother earned $15 a month cleaning an office. Her sister paid $3 a week for room and board, and until a short time previous to the study there had been another boarder who paid $5 a week for room and board. The rent of four rooms was $14 a month, but unless they succeeded in obtaining another boarder, the family intended to take cheaper rooms. Food was bought in small quantities for cash and no ice was used. The house was kept neat and clean but the kitchen was so dark that no table was spread. There was no visible waste. Judging from the appearance of the family it would be supposed that their circumstances were better than was actually the case.

The study began October 1, 1896, and continued ten days. The number of meals taken was as follows:

	Meals.
Two women (60 meals × 0.8 meal of man), equivalent to	48
Girl, 17 years old (30 meals × 0.7 meal of a man), equivalent to	21
Child, 6 years old (20 meals × 0.5 meal of man), equivalent to	10
Child, 3 years old (20 meals × 0.4 meal of man), equivalent to	8
Total number of meals taken equivalent to	87

Equivalent to one man twenty-nine days.

TABLE 13.—*Weights and cost of food and nutrients in dietary study No. 17*

Kinds, amounts, and cost of food for ten days.	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
ANIMAL FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Beef: Corned, 2.50 pounds, 13 cents (2). Veal: Shoulder, 1 pound, 8 cents (58). Lamb: Leg, 7 pounds, 56 cents (42)	2.6	25	23	.....	316
Pork: Head, 1 pound, 5 cents (70); spareribs, 2.36 pounds, 15 cents (81); salt, 2.25 pounds, 17 cents (72)	1.3	9	48	.....	483
Fish: Mackerel, salt, 1 pound, 12 cents (99); oysters, 0.63 pound, 10 cents (101)	.7	3	3	.....	40
Eggs, 0.41 pound, 5 cents (114)	.2	1	1	.....	13
Butter, 1.82 pounds, 37 cents (118)	1.3	.....	24	.....	222
Milk, 2.62 pounds, 5 cents (124)	.2	2	2	2	35
Milk, condensed, 6.51 pounds, 45 cents (125)	1.6	9	8	55	336
Total animal food	7.9	49	109	57	1,445
VEGETABLE FOOD.					
Cereals: Bread, rye, 9.70 pounds, 37 cents (136); bread, wheat, 6.62 pounds, 25 cents (134); macaroni, 1 pound, 10 cents (158); rolls, milk, 1.13 pounds, 5 cents (163); rolls, water, 2.82 pounds, 15 cents (166)	3.2	31	5	181	916
Sugar, 4.31 pounds, 22 cents (169)	.8	.....	.....	67	275
Vegetables: Beans, 1.75 pounds, 9 cents (175); cabbage, 2.50 pounds, 2 cents (179); corn, 0.50 pound, 3 cents (184); onions, 1.25 pounds, 3 cents (195); potatoes, 14.44 pounds, 17 cents (204); potatoes, sweet, 1.50 pounds, 3 cents (206); tomatoes, 8.50 pounds, 13 cents (215); turnips, 2.50 pounds, 3 cents (218)	1.8	14	2	77	392
Fruit: Apples, 5 pounds, 10 cents (221)	.3	.....	.....	9	37
Total vegetable food	6.1	45	7	334	1,620
Total food	14.0	94	116	391	3,065

The quantity of protein and energy in this study was somewhat below the standard for persons at active exercise. The cost was moderate, evincing careful management. The quantity of animal foods was not large, and for the most part such foods were economically purchased. The leg of lamb and the oysters, however, were expensive in proportion to the nutrients furnished. Had the 56 cents spent for the leg of lamb been used to buy more of the corned beef at the price paid, and the 10 cents spent for oysters used to buy more veal shoulder, the quantity of nutrients in the diet would have been increased by 18 grams of protein and 185 calories of energy per man per day. If, in addition, the 21 cents spent for cabbage, corn, onions, and tomatoes had been used to purchase more potatoes and sweet potatoes, the ration would have been still further increased by 3 grams of protein and 385 calories of energy per man per day. While these changes would not bring the amount of protein in the ration up to the commonly accepted standard, they indicate how, for the same expenditure, more nutriment could have been obtained than was actually the case. Each family must of course determine the extent to which variety shall give way to economy. Had the diet in actual use been increased by one-sixth it would probably have more nearly met the physiological requirements of the family, and even then, at the prices paid, would have cost but 16.7 cents per man per day.

DIETARY STUDY OF A TANNER'S FAMILY (NO. 171).

The family is typical of the sober, honest, and industrious poor, who maintain a continual struggle for the bare necessities of life. It consisted of the father, 45 years old; the mother, 45 years old; three boys, one 19, one 14, and one 10 years old, and two girls, one 12 and the other 8 years of age. Their weights were 168, 134, 135, 75, 65, 57, and 51 pounds, respectively. The father worked in a neighboring tannery and earned $10 per week. The oldest boy had just obtained night work in a flour-mill, but at the time he received no wages, and probably would not receive more than $3 per week at first. The 14-year-old boy was subject to epilepsy and could neither go to school nor work. He could not be left alone in the house, and thus prevented the mother from going out to work. The other children attended school. The mother had been for years a house servant and was an excellent cook. Bread was baked at home, and it is estimated this was at least $4 a month cheaper than a corresponding amount of bakers' bread. It was the ambition of the mother to be able some day to buy a whole barrel of flour. There was no visible waste. A table was spread and the family sat down together morning and night. The rent paid for four rooms, two light and two dark, was $9 a month. The kitchen was supplied with hot and cold water.

The study began October 14, 1896, and continued ten days. The number of meals taken was as follows:

	Meals.
Two men	60
Woman (30 meals × 0.8 meal of man), equivalent to	24
Boy, 14 years old (30 meals × 0.8 meal of man), equivalent to	24
Girl 12 and boy 10 years old (60 meals × 0.6 meal of man), equivalent to	36
Girl, 8 years old (30 meals × 0.5 meal of man), equivalent to	15
Total number of meals taken equivalent to	159

Equivalent to one man fifty-three days.

TABLE 14.—*Weights and cost of food and nutrients in dietary study No. 171.*

Kinds, amounts, and cost of food for ten days.	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protein.	Fat.	Carbohydrates	Fuel value.
ANIMAL FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Beef: Corned, 2 pounds, 13 cents (3); steak, chuck, 5.50 pounds, 56 cents (27); steak, round, 5 pounds, 36 cents (30); tripe, 2 pounds, 10 cents (39). Mutton: Leg, 11.13 pounds, 96 cents (47)	4.0	38	30	.....	435
Pork: Chops, 3.50 pounds, 35 cents (61); ham, corned, 2 pounds, 15 cents (66); sausage, 2 pounds, 20 cents (74); shoulder, salt, 5.10 pounds, 35 cents (78)	2.0	15	35	.....	387
Fish: Cod, boneless, 1.75 pounds, 13 cents (88); cod, fresh, 5 pounds, 30 cents (89)	.8	9	.....	.....	37
Eggs, 1.19 pounds, 20 cents (117)	.4	1	1	.....	13
Butter, 4.11 pounds, 80 cents (118)	1.5	.....	30	.....	279
Cheese, 1.50 pounds, 20 cents (120)	.4	3	4	.....	49
Milk, 2 pounds, 4 cents (124)	.....	1	1	1	15
Milk, condensed, 2.78 pounds, 17 cents (125)	.3	2	2	13	80
Total animal food	9.4	69	103	14	1,295

TABLE 14.—*Weights and cost of food and nutrients in dietary study No. 171*—Continued.

Kinds, amounts, and cost of food for ten days.	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
VEGETABLE FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Cereals; Flour, low grade, 3 pounds, 9 cents (132); flour, prepared, 27.59 pounds, 51 cents (133); bread, 7.91 pounds, 30 cents (134)	1.7	34	4	227	1,108
Sugar, 6 pounds, 23 cents (169)	.5	.....	.....	51	209
Vegetables: Greens, 5 pounds, 7 cents (189); onions, 5.56 pounds, 7 cents (195); potatoes, 31.26 pounds, 30 cents (204); tomatoes, 8.50 pounds, 7 cents (215); turnips, 7 pounds, 7 cents (218)	1.1	10	1	64	313
Total vegetable food	3.3	44	5	342	1,630
Total food	12.7	113	108	356	2,925

The average food consumption per man per day during this study was a trifle below the commonly accepted standard as regards protein, and about one-sixth below it as regards energy. The cost, 12.7 cents per man per day, was small, indicating careful management on the part of the mother. The foods which furnished the least nutriment for the money expended on them were the soup greens, onions, tomatoes, and turnips. While a certain amount of variety in vegetable foods is desirable, a part of the 28 cents thus expended might have been used for the purchase of a larger quantity of potatoes and thus have increased the nutritive value of the ration. The cost of animal foods was 75 per cent of the total cost of the food, which is somewhat larger than usual. In other words, the family expended more than was necessary for meats, which are at best quite expensive. If, for instance, from a third to a half of the 96 cents spent for a leg of mutton had been used to purchase wheat flour, and the rest for a cheaper cut of meat, the quantity of protein and energy per man per day would have been nearer that indicated by the standard for a man at moderate work. If the ration had been increased in amount by about one-tenth it would probably have been sufficient for the needs of the family, and would then have cost but 14 cents per man per day. This family, like those in dietary studies Nos. 159, 161, and 170, manifested a considerable degree of skill in their purchases of food.

DIETARY STUDY OF A FOUNDRYMAN'S FAMILY (NO. 172).

This family consisted of the father, 40 years old; his wife, 36 years old; a grandmother, 54 years old; an aunt, 28 years old; four daughters, respectively 14, 11, 4, and 2 years old, and an infant 2 months old. The weights of some members of the family were not reported. The father weighed 167; the mother, 140; the grandmother, 160; the 14-year-old daughter, 79, and the 11-year-old daughter, 70 pounds. The father a foundryman, was industrious. He earned $10

a week when on full time, but his work was unsteady. At the time of the study the grandmother was bedridden, and the aunt, a rag sorter, was so ill with consumption that she was unable to work. The oldest girl was learning box making. The family rented two rooms, one light and one dark, for which they paid $5.50 a month. The mother was a good cook and did her own marketing. Owing, however, to their very limited income, food was bought in small quantities, so that she was unable to economize as she might had she been able to purchase larger amounts. The food was of good quality, and there was no waste. Everything about the home was neat and clean and the children were tidy and respectable in appearance.

The study began October 14, 1896, and continued ten days. The number of meals taken was as follows:

	Meals.
Man	30
Three women (90 meals × 0.8 meal of man), equivalent to	72
Girl, 14 years old (30 meals × 0.7 meal of man), equivalent to	21
Girl, 11 years old (30 meals × 0.6 meal of man), equivalent to	18
Two girls, 4 and 2 years old (60 meals × 0.4 meal of man), equivalent to	24
Infant, equivalent to	9
Total number of meals taken equivalent to	174

Equivalent to one man fifty-eight days.

TABLE 15.—*Weights and cost of food and nutrients in dietary study No. 172.*

Kinds, amounts, and cost of food for ten days.	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
ANIMAL FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Beef: Neck, 2 pounds, 16 cents (21); liver, 2 pounds, 16 cents (18); shank, hind, 2 pounds, 8 cents (24). Mutton: Leg, 10.50 pounds, 76 cents (48); neck, 2 pounds, 9 cents (49)	2.2	21	18	.....	254
Pork: Bacon, 0.50 pound, 6 cents (59); chops, 9.75 pounds, 98 cents (61); feet, 5.86 pounds, 35 cents (62); salt, 4 pounds, 39 cents (72)	3.1	18	60	.....	632
Fish: Blue, 4.50 pounds, 27 cents (84); cod, fresh, 5.61 pounds, 35 cents (89)	1.0	9	1	.....	46
Butter, 5.75 pounds, $1.26 (118)	2.2	1	38	.....	358
Milk, 8.58 pounds, 20 cents (124)	.3	2	3	3	49
Milk, condensed, 5.87 pounds, 59 cents (125)	1.0	4	4	25	156
Total animal food	9.8	55	124	28	1,495
VEGETABLE FOOD.					
Cereals: Flour, 44 pounds, $1.06 (131); bread, white, 1.1 pounds, 5 cents (134); rolls, 1 pound, 5 cents (166).	2.0	40	4	266	1,292
Sugar, 15.12 pounds, 70 cents (169)	1.2	.....	.....	118	484
Vegetables: Cabbage, 6.75 pounds, 7 cents (179); potatoes, 29.60 pounds, 31 cents (204); tomatoes, 4.50 pounds, 4 cents (215); turnips, 6.37 pounds, 3 cents (219)	.8	7	.....	50	234
Total vegetable food	4.0	47	4	434	2,010
Total food	13.8	102	128	462	3,505

The quantity of energy per man per day in this study was equal to that called for by the commonly accepted standard. The quantity of

protein, however, was rather small, although as large as has been found in a considerable number of studies of families of mechanics, farmers, and other working people in comfortable circumstances. The cost, 13.8 cents per man per day, was very reasonable. No suggestion for improvement seems to be called for in this case. The satisfactory results obtained are doubtless due to the fact that the woman was a good cook and could do her own marketing. They are interesting as showing that it was possible under the given conditions to live in New York City on a ration of considerable variety and at the same time of small cost.

The quantities of protein and energy obtained for 10 cents in some of the more important food materials purchased by this family are shown in the following table:

TABLE 16.—*Cost of food materials per pound, and amounts of protein and energy obtained for 10 cents in each, in dietary study No. 172.*

Kind of food material.	Price per pound.	In 1 pound.		Amounts bought for 10 cents.			Total amount expended during study.
		Protein.	Fuel value.	Total food.	Protein.	Fuel value.	
Beef:	*Cents.*	*Pound.*	*Calories.*	*Pounds.*	*Pound.*	*Calories.*	*Cents.*
Neck	8.0	0.145	770	1.25	0.18	970	16
Liver	8.0	.207	605	1.25	.26	720	16
Shank	4.0	.096	405	2.50	.24	1,005	8
Mutton:							
Leg	7.2	.151	909	1.39	.21	1,245	76
Neck	4.5	.123	985	2.22	.27	2,180	9
Pork:							
Bacon	12.0	.091	2,795	.83	.08	2,330	6
Chops	10.0	.134	1,270	1.00	.13	1,265	98
Feet	6.0	.158	1,405	1.67	.26	2,350	35
Salt	9.8	.019	3,670	1.02	.02	3,765	39
Fish:							
Bluefish	6.0	.100	210	1.67	.17	350	27
Fresh cod	6.2	.165	325	1.61	.18	460	35
Butter	21.9	.010	3,605	.46	.....	1,615	126
Milk	2.3	.033	325	4.35	.14	1,385	20
Milk, condensed	10.0	.088	1,520	1.00	.09	1,515	59
Flour	2.4	.112	1,645	4.17	.46	6,820	106
Bread	4.6	.092	1,215	2.17	.20	2,640	5
Rolls, water	5.3	.090	1,300	1.89	.17	2,440	5
Sugar	4.6	.....	1,860	2.17	.....	9,115	70
Green vegetables: Cabbage, tomatoes, turnips	.8	.....	.....	12.50	.15	1,620	14
Potatoes	1.1	.022	385	9.10	.21	3,695	31

The food for which they spent the most was butter, which furnished no protein and not so large an amount of energy for a given sum as some of the other food materials. For instance, $1.26 spent for butter furnished some 21,000 calories of energy, while $1.06 expended for flour purchased nearly 70,000 calories and in addition over a pound of protein. It may be questioned, however, whether any reduction in the butter would be desirable under the circumstances. The comparison is made simply to show the relative returns for a given sum expended for different foods. The amount of green vegetables used was not large. Such food in reasonable amounts is very useful to give variety to the diet. The meats were all purchased at very low prices, bacon being the only one which cost more than 10 cents a

pound. The mutton neck, at 4½ cents a pound, furnished a large amount of protein and energy for the money expended, and was by far the most economical of the meats purchased. The fish furnished considerable protein, but not much energy. This was probably a wise purchase, however, since the general tendency is to purchase foods containing relatively too much fuel ingredients as compared with the amounts of protein. The use of fish counterbalanced somewhat the comparatively large amounts of sugar and butter in the diet.

DIETARY STUDY OF A TRUCKMAN'S FAMILY (NO. 177).

This family consisted of the father, 33 years old; the mother, 29 years old; 3 sons, one 11, one 7, and one 5 years of age, and a male relative 30 years old. The members of the family weighed 130, 149, 63, 50, 40, and 150 pounds, respectively. The father, a truck driver, earned $2 during the ten days covered by the study. The mother was employed as housekeeper, or janitor, receiving for her services the rent of their rooms and $4 a month in addition. The cousin was not working on full time, but paid practically all his earnings ($16 per month) into the family treasury. The two older boys obtained their dinner at school, and the youngest at a kindergarten.

The study began January 26, 1897, and continued ten days. The number of meals taken was as follows:

	Meals.
Two men	60
Woman (30 meals × 0.8 meal of man), equivalent to	24
Boy, 11 years old (22 meals × 0.6 meal of man), equivalent to	13
Boy, 7 years old (26 meals × 0.5 meal of man), equivalent to	13
Boy, 5 years old (22 meals × 0.4 meal of man), equivalent to	9
Visitor	1
Total number of meals taken equivalent to	120

Equivalent to one man forty days.

TABLE 17.—*Weights and cost of food and nutrients in dietary study No. 177.*

Kinds, amounts, and cost of food for ten days.	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
ANIMAL FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Beef: Flank, skirt steak, 4 pounds, 28 cents (35); neck, 1.20 pounds, 7 cents (21); rib, corned, 5 pounds, 33 cents (9); shank, fore, 6 pounds, 30 cents (23); steak, chuck, 2.50 pounds, 25 cents (27); tripe, pickled, 2 pounds, 10 cents (38); corned, canned, 1 pound, 15 cents (5). Mutton: Chops, 2.50 pounds, 35 cents (45); shoulder, 1 pound, 8 cents (51)	4.8	45	46	.....	613
Pork: Ham, boiled, 0.56 pound, 10 cents (64); lard, 0.25 pound, 2 cents (69)	.3	1	7	.....	69
Fish: Herring, fresh, 2 pounds, 10 cents (95)	.2	5	1	.....	30
Eggs, 0.63 pound, 10 cents (114)	.2	1	1	.....	13
Butter, 1.68 pounds, 34 cents (118)	.9	.....	16	.....	150
Milk, 4.63 pounds, 10 cents (124)	.2	2	2	3	39
Milk, condensed, 2 pounds, 18 cents (125)	.5	2	2	12	76
Total animal food	7.1	56	75	15	990

TABLE 17.—*Weights and cost of food and nutrients in dietary study No. 177*—Continued.

Kinds, amounts, and cost of food for ten days.	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
VEGETABLE FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Cereals: Barley, 0.63 pound, 4 cents (126); flour, 1 pound, 4 cents (131); oatmeal, 2 pounds, 7 cents (128); bread, 25.67 pounds, 96 cents (134); crackers, soda, 1 pound, 5 cents (156); rolls, plain, 4.50 pounds, 20 cents (164)	3.4	39	9	223	1,158
Sugar, 5.25 pounds, 24 cents (169)	6	.....	.....	59	242
Vegetables: Cabbage, 4 pounds, 5 cents (179); onions, 2.64 pounds, 8 cents (196); potatoes, 15.30 pounds, 20 cents (204); soup greens, 1 pound, 6 cents (189); tomatoes, canned, 4 pounds, 26 cents (216)	1.6	6	1	40	198
Fruits: Apples, dried, 1 pound, 10 cents (220)	.3	.....	.....	8	32
Total vegetable food	5.9	45	10	322	1,630
Total food	13.0	101	85	345	2,620

It seems hardly probable that this family was properly nourished. The quantities of protein and especially energy per man per day found in the dietary study are considerably below the commonly accepted standards. The prices paid for the animal food were reasonable, and the relative expenditure for animal food—55 per cent of the total—was rather less than the average. The most expensive food material used was canned tomatoes, for which the family expended 5 per cent of the total outlay for food, although the protein obtained was but 0.5 per cent and the energy but 0.4 per cent of the total protein and energy, respectively, in the food. The same outlay would have given a more nutritious diet if a different selection of food had been made in some cases. If the cabbage, onions, soup greens, and tomatoes had been left out of the diet and two-thirds of the money expended for them used to buy dried peas or beans, and the remainder for the purchase of more potatoes and bread, the protein could have been increased to 125 grams and the energy to 3,500 calories per man per day without increasing the cost.

DIETARY STUDY OF A LONGSHOREMAN'S FAMILY (NO. 178).

This study was made with a family which consisted of the father, 42 years old; the mother, 32 years old; the grandmother, 64 years old; four sons—one 14, one 13, one 9, and one 4 years of age—and an infant 6 months old. The weights of the members of the family, aside from the infant, were 180, 145, 170, 110, 75, 60, and 30 pounds, respectively. The father, a longshoreman, earned $3 during the ten days covered by the study. The oldest boy received $3.50 per week in a printing office. The family occupied four small rooms, only one of which was well lighted. The rent was paid by the mother's work as housekeeper or janitor.

The study began February 6, 1897, and continued ten days. The number of meals taken was as follows:

	Meals.
Man	30
Two women (60 meals × 0.8 meal of man), equivalent to	48
Boy, 14 years old (30 meals × 0.8 meal of man), equivalent to	24
Boy, 13 years old (30 meals × 0.6 meal of man), equivalent to	18
Boy, 9 years old (30 meals × 0.5 meal of man), equivalent to	15
Boy, 4 years old (30 meals × 0.4 meal of man), equivalent to	12
Infant, equivalent to	9
Visitor	1
Total number of meals taken equivalent to	157

Equivalent to one man fifty-two days.

TABLE 18.—*Weights and cost of food and nutrients in dietary study No. 178.*

Kinds, amounts, and cost of food for ten days.	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
ANIMAL FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Beef: Corned, 9.40 pounds, 49 cents (4); shank, hind, 4.31 pounds, 20 cents (24); steak, chuck, 2.75 pounds, 30 cents (27); tripe, pickled, 2 pounds, 10 cents (38)	2.1	25	25	.....	335
Pork: Loin, 5.43 pounds, 42 cents (60); trimmings, 1.50 pounds, 12 cents (82)	1.0	9	23	.....	251
Fish: Cod, salt, 1 pound, 8 cents (91); herring, fresh, 2.76 pounds, 15 cents (95)	.4	6	2	.....	43
Eggs, 0.48 pound, 5 cents (114)	.1	1	.....	.....	4
Butter, 2.50 pounds, 46 cents (118)	.9	.....	18	.....	168
Milk, 7.57 pounds, 24 cents (124)	.5	2	3	3	49
Total animal food	5.0	43	71	3	850
VEGETABLE FOOD.					
Cereals: Flour, 4 pounds, 11 cents (131); bread, 24.06 pounds, 51 cents (138); buns, 6.88 pounds, 30 cents (140)	1.8	32	7	171	897
Sugar, 6 pounds, 34 cents (169)	.6	.....	.....	52	213
Vegetables: Beans, dried, 1.87 pounds, 7 cents (175); cabbage, 5.25 pounds, 7 cents (179); carrots, 0.37 pound, 1 cent (182); onions, 0.66 pound, 3 cents (196); peas, 1 pound, 2 cents (200); potatoes, 22.74 pounds, 30 cents (204); turnips, 4.75 pounds, 6 cents (218)	1.1	11	1	59	295
Total vegetable food	3.5	43	8	282	1,405
Total food	8.5	86	79	285	2,255

The income of this family during the time of the study was very limited, indeed, and the amount expended for food, 8.5 cents per man per day, was unusually small. The food materials obtained for this sum supplied 86 grams of protein and 2,255 calories of energy, which gives evidence of considerable careful management on the part of the mother. The quantity of nutrients, however, was insufficient for the proper nourishment of the family. It is interesting to note that in this case 2 pounds of dried beans were used during the time of the study. The prices paid for meats were very reasonable and the cost of vegetables, other than potatoes, was small.

The following table shows the quantity of protein and energy in 10 cents' worth of the different food materials purchased by this family:

TABLE 19.—*Cost of food materials per pound, and amounts of protein and energy obtained for 10 cents in each, in dietary study No. 178.*

Kind of food material.	Price per pound.	In 1 pound.		Amounts bought for 10 cents.			Total amount expended during study.
		Protein.	Fuel value.	Total food.	Protein.	Fuel value.	
	Cents.	*Pound.*	*Calories.*	*Pounds.*	*Pound.*	*Calories.*	*Cents.*
Beef:							
Corned	5.2	0.183	1,385	1.92	0.35	2,650	49
Hind shank	4.6	.096	405	2.17	.21	870	20
Chuck steak	10.9	.166	735	.92	.15	675	30
Pickled tripe	5.0	.117	270	2.00	.23	545	10
Pork:							
Loin	7.7	.166	1,580	1.30	.21	2,045	42
Trimmings	8.0	.050	2,835	1.25	.06	3,535	12
Fish:							
Salt cod	8.0	.190	3,670	1.25	.24	460	8
Fresh herring	5.4	.195	660	1.85	.36	1,215	15
Butter	18.4	.010	3,605	.54	.....	1,960	46
Milk	3.2	.033	325	3.13	.10	1,020	24
Flour	2.8	.112	1,645	3.57	.41	5,975	11
Bread	2.1	.109	1,215	4.76	.51	5,920	51
Buns	4.4	.081	1,450	2.27	.19	3,325	30
Sugar	5.7	.....	1,860	1.75	.....	3,280	34
Beans, dried	3.7	.225	1,605	2.70	.60	4,285	7
Green vegetables: Cabbage, carrots, onions, peas, turnips	1.6	.....	.....	6.25	.21	1,855	19
Potatoes	1.3	.022	385	7.69	.17	2,945	30

It will be seen that flour, stale bread, and beans were the most economical sources of both protein and energy. As sources of protein, the pork trimmings and the milk, and as sources of energy some of the meats were the least economical. The most economical meat was the corned beef, which the family obtained for about 5 cents a pound; the most expensive was the chuck steak. It is difficult to make suggestions for improvement in such a case unless more money was available for the purchase of food. If the family had been willing to eat more beans and bread, less vegetables, less meats, and rather less sugar, more nutriment could have been obtained for the same money. If they had had means to increase the ration one-third in amount with the same relative distribution of purchases as was actually found, the protein and energy would have been nearly sufficient for their needs, and the cost would have been less than 12 cents per man per day.

DIETARY STUDY OF A CARPENTER'S FAMILY (NO. 180).

This study was made with the same family as in studies No. 166 above, and No. 31 previously published.[a] The father had work at his trade of carpentering only a few hours a day, and earned not more than $5 a week. The older son (aged 20 years) gave his mother $7 a week. The 14-year-old daughter also gave her wages of $3 a week to her mother. The family were in good health.

[a] U. S. Dept. Agr., Office of Experiment Stations Bul. 46.

The study began February 17, 1897, and continued ten days. The number of meals taken was as follows:

	Meals.
Two men	60
Woman (30 meals × 0.8 meal of man), equivalent to	24
Girl, 14 years old (30 meals × 0.7 meal of man), equivalent to	21
Boy, 11 years old (30 meals × 0.6 meal of man), equivalent to	18
Total number of meals taken equivalent to	123

Equivalent to one man forty-one days.

TABLE 20.—*Weights and cost of food and nutrients in dietary study No. 180.*

Kinds, amounts, and cost of food for ten days.	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
ANIMAL FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Beef: Shoulder, 2.50 pounds, 25 cents (26); steak, round, 5.06 pounds, 65 cents (29); fore shank, 1 pound, 7 cents (23); kidney, 2.29 pounds, 20 cents (17); cottolene, 2.13 pounds, 22 cents (12)	3.4	20	35	.....	406
Pork: Loin, fresh, 2.81 pounds, 33 cents (81); ham, smoked, 2.76 pounds, 50 cents (65); ham, boiled, 0.80 pound, 10 cents (64)	2.3	12	23	.....	263
Chickens, 3.50 pounds, 40 cents (83)	.....	7	6	.....	84
Eggs, 6.12 pounds, 71 cents (117)	.....	8	6	.....	89
Butter, 3.31 pounds, 77 cents (118)	.....	.....	31	.....	288
Cheese, 0.19 pound, 5 cents (120)	.....	1	1	.....	13
Milk, 37.75 pounds, 90 cents (124)	6.9	14	17	21	302
Total animal food	12.6	62	119	21	1,445
VEGETABLE FOOD.					
Cereals: Flour, 4.82 pounds, 15 cents (131); rice, 1.50 pounds, 8 cents (130); prepared flour, 2.13 pounds, 8 cents (133); bread, 17.68 pounds, 56 cents (134); bread, brown, 0.94 pound, 2 cents (135); rolls, plain, 11.62 pounds, 60 cents (164); doughnuts, 3.37 pounds, 20 cents (157)	4.1	44	17	276	1,470
Sugar, 3.93 pounds, 15 cents (169)	.4	.....	.....	44	180
Vegetables: Beans, 1.75 pounds, 7 cents (175); cabbage, 3.50 pounds, 5 cents (179); onions, 1.19 pounds, 3 cents (196); peas, green, 2 pounds, 5 cents (199); potatoes, 33.31 pounds, 39 cents (204); soup greens, 0.68 pound, 5 cents (189); tomatoes, 1 pound, 8 cents (215); sauerkraut, 3.63 pounds, 10 cents (212)	2.0	15	1	87	428
Fruits: Apples, 3.92 pounds, 7 cents (222); raspberry jelly, 1 pound, 14 cents (232)	.5	.....	1	14	67
Total vegetable food	7.0	59	19	421	2,145
Total food	19.6	121	138	442	3,590

The quantities of protein and energy per man per day found in this dietary study were in close agreement with those called for by the commonly accepted standard for men at moderate muscular work. The cost, while reasonable, was considerably larger than in some of the previous studies, and in view of the small and uncertain income of the father might advantageously have been reduced by the substitution of cereal foods and dried legumes for the larger portion of the vegetables other than potatoes, and for part of the meats. It must be remembered that while meats form an appetizing part of the diet, and one which the average American workman thinks he can not do without, they are probably not absolutely indispensable.

DIETARY STUDY OF A SAIL RIGGER'S FAMILY (NO. 183).

This study was made in a family comprising the father, 50 years old, Irish born; the mother, 45 years old, also Irish born; and three sons, one 15, one 12, and one 6 years of age, weighing 200, 180, 78, 60, and 40 pounds, respectively. They were all in good health. The father, a sail rigger, earned $3 per day when working full time, but seldom was fully employed. During the time covered by the study he worked but two days on account of wet weather. Three rooms, all light, cost the family $10 a month.

The study began March 13, 1897, and continued ten days. The number of meals taken was as follows:

	Meals.
Man	30
Woman (30 meals × 0.8 meal of man), equivalent to	24
Boy, 15 years old (30 meals × 0.8 meal of man), equivalent to	24
Boy, 12 years old (30 meals × 0.6 meal of man), equivalent to	18
Boy, 6 years old (24 meals × 0.5 meal of man), equivalent to	12
Total number of meals taken equivalent to	108

Equivalent to one man thirty-six days.

TABLE 21.—*Weights and cost of food and nutrients in dietary study No. 183.*

Kinds, amounts, and cost of food for ten days.	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
ANIMAL FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Beef: Flank, corned, 4.68 pounds, 35 cents (44a); heart, 3.88 pounds, 12 cents (16); neck, 2 pounds, 15 cents (21); steak, chuck, 3.25 pounds, 41 cents (28)	2.8	27	42	.....	501
Pork: Bacon, 1.24 pounds, 10 cents (59); chops, 2.32 pounds, 35 cents (60); feet, pickled, 8.37 pounds, 42 cents (63)	2.4	23	34	.....	411
Fish: Cod, fresh, 2.81 pounds, 21 cents (90)	.6	6	.....	.....	25
Eggs, 1.14 pounds, 13 cents (117)	.4	2	1	.....	18
Butter, 0.62 pound, 13 cents (118)	.4	.....	7	.....	65
Milk, 11.12 pounds, 33 cents (124)	.9	5	6	7	105
Total animal food	7.5	63	90	7	1,125
VEGETABLE FOOD.					
Cereals: Barley, pearled, 0.31 pound, 2 cents (126); bread, 40.36 pounds, $1.32 (134)	3.7	47	7	273	1,376
Sugar, 5.75 pounds, 29 cents (169)	.8	.....	.....	73	299
Vegetables: Beans, 2 pounds, 8 cents (175); cabbage, 8.99 pounds, 20 cents (180); onions, 1.25 pounds, 6 cents (196); potatoes, 28.75 pounds, 45 cents (204); soup greens, 1.25 pounds, 5 cents (189); tomatoes, 4 pounds, 16 cents (216); turnips, 1.75 pounds, 2 cents (218)	2.9	17	1	93	460
Total vegetable food	7.4	64	8	439	2,135
Total food	14.9	127	98	446	3,260

The quantity of protein consumed per man per day by this family was slightly larger, while the energy was somewhat smaller than called for by the commonly accepted standard for a man at moderate work.

Inasmuch as protein is the most expensive nutrient and is furnished by animal foods in relatively larger proportions than in vegetable foods, it would appear that this family might have had a rather better balanced ration by substituting cereals for a portion of the animal food. Such a change would certainly not have increased and perhaps might have diminished the cost of the diet. As it was, however, the cost was very reasonable, amounting to but 15 cents per man per day.

DIETARY STUDY OF A DAY LABORER'S FAMILY (NO. 185).

This family comprised the father, 45 years old; the mother, 45 years old, and four children; two boys, one 21 and the other 16 years old, and two girls, one aged 13 and the other 7 years. Their weights were 169, 235, 169, 130, 89, and 63 pounds, respectively. The health of the family was good. The father, a day laborer, had been idle for some time. The mother earned from $1 to $1.50 a week washing. The young man was a helper on a truck wagon receiving $3 a week wages. The rent of two back rooms, one dark, which they occupied was $5.50 a month. Food was bought by the meal and there was no visible waste. They used stale bread which could be purchased at half the price of fresh bread. Any food left from one meal remained on the table till the next.

The study began March 2, 1897, and continued ten days. The number of meals taken was as follows:

	Meals.
Two men	60
Woman (30 meals × 0.8 meal of man), equivalent to	24
Boy, 16 years old (30 meals × 0.8 meal of man), equivalent to	24
Girl, 13 years old (30 meals × 0.6 meal of man), equivalent to	18
Boy, 7 years old (30 meals × 0.5 meal of man), equivalent to	15
Total number of meals taken equivalent to	141

Equivalent to one man forty-seven days.

TABLE 22.—*Weights and cost of food and nutrients in dietary study No. 185.*

Kinds, amounts, and cost of food for ten days.	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
ANIMAL FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Beef: Shoulder clod, 2 pounds, 20 cents (26); skirting steak, 3.50 pounds, 36 cents (36)	1.2	9	8	.....	112
Pork: Shoulder, corned, 5.56 pounds, 42 cents (78); sausage meat, 2 pounds, 18 cents (75)	1.3	12	24	.....	273
Eggs, 1.12 pounds, 25 cents (114)	.5	1	1	.....	14
Butter, 2.75 pounds, 54 cents (118)	1.1	.....	23	.....	214
Cheese, 1 pound, 13 cents (120)	.3	3	3	.....	40
Milk, 18.70 pounds, 46 cents (124)	1.0	6	7	9	127
Total animal food	5.4	31	66	9	780

TABLE 22.—*Weights and cost of food and nutrients in dietary study No. 185*—Continued.

Kinds, amounts, and cost of food for ten days.	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
VEGETABLE FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Cereals: Oatmeal, 5 pounds, 20 cents (128); bread, 39.37 pounds, 78 cents (138); buns, 1.14 pounds, 5 cents (140); crackers, soda, 0.50 pound, 4 cents (156); cake, 0.50 pound, 6 cents (142)	2.4	51	10	249	1,323
Sugars, starches, etc.: Molasses, 6.20 pounds, 22 cents (170); sugar, 4.56 pounds, 24 cents (169); cornstarch, 0.37 pound, 3 cents (172)	1.0	1	.....	89	369
Vegetables: Cabbage, 4 pounds, 4 cents (180); potatoes, 9.19 pounds, 21 cents (204); turnips, 3.44 pounds, 7 cents (218)	.7	3	.....	21	98
Total vegetable food	4.1	55	10	359	1,790
Total food	9.5	86	76	368	2,570

The family here studied, like that in No. 178, had a very small income. This fact was apparent in the quantity of nutrients and energy in the food eaten. A considerable degree of good management was displayed, however, in the selection of food, which cost but 9.5 cents per man per day. The chief suggestion for the improvement of this dietary would be an increase in the amounts of protein and energy by one-fourth or two-fifths. If this were done by increasing proportionally the quantities of food materials actually used it would make the cost only about 11.5 cents per man per day. If, however, the family felt that they could not increase the living expenses, an increase of nutriment might still have been obtained by using less animal food and a corresponding larger amount of cereal foods. This might, of course, have detracted to some extent from the palatability of the diet according to the opinion of the average working man, but would have furnished the protein and energy required for proper nourishment of the body. At the same time the diet would have been wholesome.

DIETARY STUDY OF A FRUIT VENDER'S FAMILY (NO. 186).

This study was carried on in an Italian family comprising the husband, 55 years; his wife, 36 years; a nephew of 16 years, a niece of 8 years, a brother-in-law, 45 years, and his wife, 40 years of age. The weights of the members of the family were 200, 130, 120, 45, 120, and 130 pounds, respectively. All were natives of Italy, and the three men were employed at fruit vending. The head of the family earned $10 or $12 a week, and his wife, who sewed for a clothing house, earned a few dollars a week. The brother-in-law and nephew worked for their board. During the study the men worked eight days. They had a cup of coffee when they went out to work at 4 o'clock in the morning, and later in the day purchased a cup of coffee and some rolls; the other meals were taken at home. It has been assumed that,

as the food eaten away from home was small in amount, each one of the men had the equivalent of twenty-six full meals at home during the study. Ten dollars a month rent was paid for the three rooms which they occupied. Food was bought by the day.

The study began March 17, 1897, and continued ten days. The number of meals taken was as follows:

	Meals.
Two men	52
Two women (60 meals × 0.8 meal of man), equivalent to	48
Boy, 16 years old (26 meals × 0.8 meal of man), equivalent to	21
Girl, 8 years old (30 meals × 0.5 meal of man), equivalent to	15
Total number of meals taken equivalent to	136

Equivalent to one man forty-five days.

TABLE 23.—*Weights and cost of food and nutrients in dietary study No. 186.*

Kinds, amounts, and cost of food for ten days.	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
ANIMAL FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Beef: Chopped, 1.50 pounds, 15 cents (29); shank, fore, 6 pounds, 44 cents (23); steak, sirloin, 4 pounds, 52 cents (33); steak, round, 2 pounds, 24 cents (29); suet, 1 pound, 5 cents (37). Veal: Chops, 1.61 pounds, 20 cents (54); cutlets, 1 pound, 14 cents (55)	3.9	27	26	.....	353
Pork: Chops, 2.68 pounds, 26 cents (60); ham, 0.50 pound, 10 cents (66); lard, 3 pounds, 18 cents (69)	1.2	5	40	.....	393
Chicken, 6.11 pounds, 98 cents (83)	2.2	12	10	.....	142
Fish: Cod, salt, 3 pounds, 18 cents (91); shad, fresh, 2.81 pounds, 28 cents (108)	1.0	11	3	.....	73
Eggs, 12.12 pounds, $1.29 (114)	2.9	16	13	.....	187
Butter, 2.74 pounds, 55 cents (118)	1.2	.....	23	.....	214
Cheese, 2 pounds, 34 cents (120)	.7	5	7	.....	86
Milk, 40.98 pounds, 96 cents (124)	2.1	14	17	21	302
Total animal food	15.2	90	139	21	1,750
VEGETABLE FOOD.					
Cereals: Corn meal, 2 pounds, 8 cents (151); rice, 4 pounds, 25 cents (130); macaroni, 6.50 pounds, 40 cents (158); vermicelli, 1 pound, 9 cents (168); bread, 25.08 pounds, $1.16 (134); cake, 1.25 pounds, 15 cents (142); pie, apple, 1 pound, 10 cents (160)	5.0	39	7	249	1,246
Sugars, starches, oils, etc.: Sugar, 6 pounds, 29 cents (169); cocoa, 0.50 pound, 11 cents (171); olive oil, 1.36 pounds, 34 cents (173)	1.6	1	15	62	397
Vegetables: Beans, dry, 1 pound, 5 cents (175); cabbage, 4 pounds, 6 cents (180); greens, dandelion, 2 pounds, 17 cents (188); greens, 5.43 pounds, 30 cents (189); onions, 1 pound, 5 cents (195); parsley, 0.12 pound, 1 cent (197); pickles, mixed, 1 pound, 10 cents (203); potatoes, 10.49 pounds, 14 cents (204); spinach, 4.12 pounds, 33 cents (214); tomatoes, 8 pounds, 30 cents (215)	3.4	10	1	39	210
Fruits: Jelly, currant, 0.75 pound, 8 cents (232); nuts, 0.50 pound, 5 cents (242)	.3	1	2	6	47
Total vegetable food	9.3	51	25	356	1,900
Total food	24.5	141	164	377	3,650

Judged by the usual dietary standards, this family consumed food in excess of their needs. The protein might have been reduced by one-seventh and still have been sufficient according to the commonly accepted dietary standards. The energy, however, could have been

reduced but very little. The cost of the food, 24.5 cents per man per day, was much greater than in some of the dietary studies previously described. This was due in part to the use of more expensive meats and in part to the purchase of green vegetables. The cost of the diet could have been largely reduced by the selection of cheaper meats and fish, the use of fewer eggs, and especially by decreasing the amount of green vegetables and using cereals and dry legumes in their place. The relative values of some of the principal items in this study are illustrated in the following table, showing the amounts of protein and energy in 10 cents' worth of each at prices actually paid per pound:

TABLE 24.—*Cost of food materials per pound, and amounts of protein and energy obtained for 10 cents in each, in dietary study No. 186.*

Kind of food material.	Price per pound.	In 1 pound.		Amounts bought for 10 cents.			Total amount expended during study.
		Protein.	Fuel value.	Total food.	Protein.	Fuel value.	
	Cents.	*Pound.*	*Calories.*	*Pounds.*	*Pound.*	*Calories.*	*Cents.*
Beef:							
Chopped	10.0	0.190	895	1.00	0.19	895	15
Fore shank	7.3	.128	545	1.37	.18	745	44
Sirloin	13.0	.165	985	.77	.13	760	52
Round	12.0	.190	895	.83	.16	745	24
Suet	5.0	.047	3,540	2.00	.09	7,080	5
Veal:							
Chops	12.5	.199	825	.80	.16	660	20
Cutlets	14.0	.201	690	.71	.14	495	14
Pork:							
Chops	9.6	.166	1,580	1.04	.17	1,645	26
Ham	20.0	.142	1,675	.50	.07	835	10
Lard	6.0	.....	4,220	1.67	.....	7,035	18
Chicken	16.0	.193	1,045	.63	.12	655	98
Cod, salt	6.0	.190	315	1.67	.32	525	18
Shad	10.0	.188	750	1.00	.19	750	28
Eggs	10.6	.134	720	.94	.13	680	129
Butter	20.0	.010	3,605	.50	.....	1,800	55
Cheese	17.0	.259	1,950	.59	.15	1,145	34
Milk	2.3	.033	325	4.35	.14	1,415	96
Corn meal	4.0	.092	1,655	2.50	.23	4,140	8
Rice	6.2	.080	1,630	1.61	.13	2,630	25
Macaroni	6.2	.134	1,665	1.61	.22	2,685	40
Vermicelli	9.0	.109	1,625	1.11	.12	1,805	9
Bread	4.6	.092	1,215	2.17	.20	2,640	116
Cake	12.0	.063	1,675	.83	.05	1,395	15
Pie, apple	10.0	.031	1,270	1.00	.03	1,270	10
Sugar	4.8	.....	1,860	2.08	.....	3,875	29
Cocoa	22.0	.216	2,320	.45	.10	1,055	11
Olive oil	25.0	.....	4,220	.40	.....	1,690	34
Beans, dried	5.0	.225	1,605	2.00	.45	3,210	5
Cabbage	1.5	.014	125	6.67	.09	835	6
Greens, dandelion	8.5	.024	285	1.18	.03	335	17
Greens	5.5	.042	220	1.82	.08	400	30
Onions	5.0	.014	205	2.00	.03	410	5
Pickles	10.0	.011	110	1.00	.01	110	10
Potatoes	1.3	.022	385	7.69	.17	2,960	14
Spinach	8.0	.021	110	1.25	.03	140	33
Tomatoes	3.8	.009	105	2.63	.02	275	30
Jelly	10.7	.020	1,560	.93	.02	1,460	8
Nuts	10.0	.079	1,600	1.00	.08	1,600	5

DIETARY STUDY OF A WATCHMAN'S FAMILY (NO. 187).

This study was made in the same family as that in dietary study No. 34, reported in a previous publication.[a] The family comprised the father, 50 years old; the mother, 40 years old; an aunt, 26 years old, and seven children—three boys, one 20, one 15, and one 13 years, and four girls, one 16, one 12, one 7, and one 3 years of age.

[a] U. S. Dept. Agr., Office of Experiment Stations Bul. 46.

The weights of the different members were 150, 120, 95, 117, 83, 65, 100, 60, 50, and 30 pounds, respectively. The father, a night watchman, was unemployed at the time of the study; the mother went out cleaning and earned $3 a week. The oldest son was a printer, and always gave his mother $10 or $12 a week. The older daughter was learning to make kid gloves and earned $3 a week. The aunt was employed at book folding, and paid $3 a week for board. The family paid $13 a month rent for four rooms. Food was purchased by the day for cash. The family were thrifty in their habits and neat in appearance.

The study began March 24, 1897, and continued ten days. The number of meals taken was as follows:

	Meals.
Two men	60
Two women (56 meals × 0.8 meal of man), equivalent to	45
Girl, 16 years old (30 meals × 0.7 meal of man), equivalent to	21
Boy, 15 years old (30 meals × 0.8 meal of man), equivalent to	24
Boy and girl, 13 and 12 years old (60 meals × 0.6 meal of man), equivalent to	36
Girl, 7 years old (30 meals × 0.5 meal of man), equivalent to	15
Girl, 3 years old (30 meals × 0.4 meal of man), equivalent to	12
Total number of meals taken equivalent to	213

Equivalent to one man seventy-one days.

TABLE 25.—*Weights and cost of food and nutrients in dietary study No. 187.*

Kinds, amounts, and cost of food for ten days.	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
ANIMAL FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Beef: Steak, sirloin, 4.68 pounds, 60 cents (33); corned, 5 pounds, 30 cents (3). Lamb, 3.5 pounds, 32 cents (43a)	1.7	14	19	.....	234
Pork: Ham, 5 pounds, 69 cents (66)	.9	4	11	.....	118
Chicken, 3.37 pounds, 39 cents (83)	.6	3	3	.....	40
Fish: Salmon, canned, 1 pound, 18 cents (104); smelts, 5 pounds, 45 cents (109); oysters, 1.38 pounds, 25 cents (101)	1.2	7	1	.....	38
Eggs, 7.22 pounds, 63 cents (114)	.9	6	5	.....	71
Butter, 4.62 pounds, $1.07 (118)	1.5	.....	25	.....	232
Cheese, 0.5 pound, 8 cents (120)	.1	1	1	.....	13
Milk, 12.07 pounds, 29 cents (124)	.4	3	3	4	56
Milk, condensed, 5.5 pounds, 40 cents (125)	.6	3	3	19	118
Total animal food	7.9	41	71	23	920
VEGETABLE FOOD.					
Cereals: Barley, pearled, 0.44 pound, 2 cents (126); bread, 6.25 pounds, 20 cents (134); bread, rye, 39.2 pounds, $1.42 (136); crackers, soda, 1 pound, 7 cents (156)	2.4	27	2	162	794
Sugar, 13.5 pounds, 62 cents (169)	.8	.....	.....	86	353
Vegetables: Beans, 2 pounds, 8 cents (175); cabbage, 2.94 pounds, 8 cents (179); cabbage, 2.74 pounds, 7 cents (181); carrots, 0.62 pound, 1 cent (182); greens, 0.5 pound, 3 cents (189); onions, 0.87 pound, 3 cents (196); peas, dried, 1 pound, 4 cents (200); potatoes, 24.95 pounds, 29 cents (204); tomatoes, 2 pounds, 8 cents (215); tomato catsup, 2 pounds, 5 cents (217)	1.2	10	1	46	240
Fruits: Prunes, 6.24 pounds, 58 cents (237)	.8	1	.....	29	123
Total vegetable food	5.2	38	3	323	1,510
Total food	13.1	79	74	346	2,430

The quantities of protein and energy in this study were below those which it is believed suffice for the proper nourishment of a man at moderate muscular work and should have been increased by about 40 per cent. The cost of the increased ration, provided it consisted of the same kinds of food materials and in the same proportions, would have been about 18.5 cents per man per day. Such a sum is quite reasonable. However, the amounts of nutrients might have been increased, without much increase in cost, by the purchase of cheaper meats and fewer green vegetables and by the use of more cereals and legumes.

DIETARY STUDY OF A BOOKBINDER'S FAMILY (NO. 188).

This study was made in a family which consisted of the father, 36 years old, the mother, 39 years old, and eight children—six daughters, aged, respectively, 18, 16, 14, 10, 6, and 4 years, and two sons, one 12 and the other 2 years of age. The weights of the family were 165, 125, 110, 100, 86, 65, 50, 40, 75, and 35 pounds, respectively. The father, a bookbinder, who had worked in the same place for twenty years, earned $12 a week. The two older girls were wage-earners, one working at bookbinding, the other at kid-glove making. Each paid their mother $2.50 a week. This family had occupied the same four rooms, for which they paid $13 a month rent, for thirteen years. Food was bought in small quantities for cash. There was no avoidable waste.

The study began March 24, 1897, and continued ten days. The number of meals taken was as follows:

	Meals.
Man	30
Two women (60 meals × 0.8 meal of man), equivalent to	48
Two girls, 16 and 14 years old (60 meals × 0.7 meal of man), equivalent to	42
Two children, 12 and 10 years old (60 meals × 0.6 meal of man), equivalent to	36
Child, 6 years old (30 meals × 0.5 meal of man), equivalent to	15
Two children, 2 and 4 years old (60 meals × 0.4 meal of man), equivalent to	24
Total number of meals taken equivalent to	195

Equivalent to one man sixty-five days.

TABLE 26.—*Weights and cost of food and nutrients in dietary study No. 188.*

Kinds, amounts, and cost of food for ten days.	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
ANIMAL FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Beef: Corned, 11.50 pounds, $1.15 (3); steak, round, 4 pounds, 48 cents (29); steak, sirloin, 4 pounds, 53 cents (33)	3.3	22	27	.....	341
Fish: Cod, fresh, 3 pounds, 24 cents, (89); cod, salt, 3 pounds, 24 cents (91); oysters, 3.30 pounds, 25 cents (101); salmon, canned, 1 pound, 18 cents(104).	1.4	9	1	1	50
Eggs, 4.58 pounds, 41 cents (117)	.6	4	3	.....	44
Butter, 5.5 pounds, $1.65 (118)	2.6	.....	33	.....	307
Cheese, 1 pound, 10 cents (120)	.2	2	2	.....	26
Milk, 52.92 pounds, $1.56 (124)	2.4	12	15	18	262
Total animal food	10.5	49	81	19	1,030
VEGETABLE FOOD.					
Cereals: Rice, 1 pound, 6 cents (130); bread, rye, 1.06 pounds, 5 cents (136); bread, wheat, 39.32 pounds, $1.79 (134); buns, 0.88 pound, 5 cents (140); cakes, sweet, 1 pound, 16 cents (142); crackers, 0.50 pound, 9 cents, (152); muffins, 0.68 pound, 5 cents (159); rolls, plain, 3.76 pounds, 20 cents (164)	3.8	31	6	183	933
Sugar, 8.55 pounds, 41 cents (169)	.6	.....	.....	60	246
Vegetables: Corn, canned, 3 pounds, 20 cents (185); potatoes, 25.12 pounds, 28 cents (204); tomatoes, canned, 8 pounds, 28 cents (216)	1.2	5	1	39	189
Fruits: Prunes, 1.57 pounds, 16 cents (237)	.2	.....	.....	8	32
Total vegetable food	5.8	36	7	290	1,400
Total food	16.3	85	88	309	2,430

As in the previous study, the quantities of nutrients and energy consumed per man per day should have been about 40 per cent larger in order to equal the amounts usually considered as desirable for men at moderate work. The father, however, worked indoors and at not especially active labor, so that it may be that the family needed rather less than is called for by the standard suggested. At the time of the study the family expended $7.40 per week for food, which was about half their income. If the diet selected had been increased by 40 per cent the cost would have been 22.8 cents per man per day. The relatively high cost as compared with that observed in some of the previous studies is accounted for by the use of more expensive meats, by the higher price paid for some of the cheaper cuts of meat, and probably also for bakers' goods, and by the expenditures for canned corn and canned tomatoes.

DIETARY STUDY OF A BUTCHER'S FAMILY (NO. 192).

The family in this study consisted of the husband (a butcher's assistant) and his wife, both natives of Ireland. The husband was sober and industrious and earned $11 per week. He also received a late breakfast at his employer's expense. His work began very early in the morning. The family paid $7.50 a month rent for two rooms. Food was bought by the day for cash.

The study began April 3, 1897, and continued ten days. The number of meals taken was as follows:

	Meals.
Man	22
Woman (30 meals × 0.8 meal of man), equivalent to	24
Woman visitor (5 meals × 0.8 meal of man), equivalent to	4
Total number of meals taken equivalent to	50

Equivalent to one man seventeen days.

TABLE 27.—*Weights and cost of food and nutrients in dietary study No. 192.*

Kinds, amounts, and cost of food for ten days.	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
ANIMAL FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Beef: Steak, sirloin, 2 pounds, 24 cents (33). Lamb chops, 5.5 pounds, 46 cents (46). Mutton, shoulder, 3 pounds, 15 cents (51)	5.0	43	36	.....	697
Pork: Ham, 5 pounds, 60 cents (66)	3.5	19	45	.....	496
Fish: Cod, 2 pounds, 16 cents (89)	1.0	6	.....	.....	24
Eggs, 5.43 pounds, 42 cents (117)	2.5	17	14	.....	200
Butter, 0.75 pound, 21 cents (118)	1.2	.....	17	.....	158
Milk, 1.25 pounds, 4 cents (124)	.2	1	1	2	22
Milk, condensed, 1 pound, 7 cents (125)	.4	3	2	14	88
Total animal food	13.8	89	135	16	1,685
VEGETABLE FOOD.					
Cereals: Bread, 8.25 pounds, 29 cents (134)	1.7	20	3	117	590
Sugars, starches, and oils: Sugar, 3.75 pounds, 18 cents (169); cocoa, 0.5 pound, 16 cents (171)	2.0	3	4	105	480
Vegetables: Cabbage, 5 pounds, 5 cents (180); dandelion greens, 0.75 pound, 2 cents (188); potatoes, 11.74 pounds, 15 cents (204); tomatoes, 2 pounds, 7 cents (215); turnips, 2.75 pounds, 3 cents (218)	1.9	11	1	74	360
Total vegetable food	5.6	34	8	296	1,430
Total food	19.4	123	143	312	3,115

In this study the cost of food per man per day is not excessive in proportion to the income, while the nutrients and energy obtained are not far from the amounts called for by the usual dietary standard.

DIETARY STUDY OF A SAIL RIGGER'S FAMILY (NO. 193).

The family here studied consisted of the father, born in Germany, aged 42 years, weighing 160 pounds; the mother, born in Sweden, aged 52 years, weighing 202 pounds; and a daughter, 6 years old, weighing 52 pounds. The father, a sail rigger, earned $21 per week. On working days he bought his breakfasts at a restaurant. The family occupied four rooms, for which they paid $14 a month rent, but sublet one room for $6 a month. Food was bought for cash in small quantities at the small markets.

The study began April 3, 1897, and continued ten days. The number of meals taken was as follows:

	Meals.
Man	23
Woman (30 meals × 0.8 meal of man), equivalent to	24
Girl, 6 years old (30 meals × 0.5 meal of man), equivalent to	15
Total number of meals taken equivalent to	62

Equivalent to one man twenty-one days.

TABLE 28.—*Weights and cost of food and nutrients in dietary study No. 193.*

Kinds, amounts, and cost of food for ten days.	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
ANIMAL FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Beef: Round steak, 4.5 pounds, 54 cents (29); blood, 2 pounds, 10 cents (39a). Veal: Cutlets, 1.5 pounds, 12 cents (55); leg, 5.5 pounds, 55 cents (56)	6.2	47	24	.....	416
Chicken, 2.25 pounds, 30 cents (83)	1.4	9	8	.....	111
Fish: Cod, 2 pounds, 10 cents (87); pike, fresh, 4 pounds, 24 cents (103); perch, yellow, 2 pounds, 15 cents (102); sardines, canned, 1 pound, 25 cents (107)	3.6	20	3	.....	110
Eggs, 9.37 pounds, 75 cents (114)	3.6	27	21	.....	306
Butter, 2.11 pounds, 49 cents (118)	2.3	1	39	.....	367
Milk, 7.44 pounds, 19 cents (124)	.9	5	7	8	119
Milk, condensed, 7 pounds, 49 cents (125)	2.3	13	12	82	501
Total animal food	20.3	122	114	90	1,930
VEGETABLE FOOD.					
Cereals: Flour, 3 pounds, 12 cents (131); cake, coffee, 1.13 pounds, 8 cents (143); bread, rye, 3.88 pounds, 18 cents (136); bread, wheat, 2 pounds, 8 cents (134); rolls, plain, 1 pound, 5 cents (164)	2.4	23	5	144	731
Sugar, 4.87 pounds, 20 cents (169)	1.0	.....	.....	105	431
Vegetables: Leeks, 0.39 pound, 1 cent (192); onions, 1 pound, 2 cents (195); parsnips, 4.25 pounds, 2 cents (198); potatoes, 17.92 pounds, 20 cents (204); sweet potatoes, 0.36 pound, 1 cent (207); tomatoes, 6 pounds, 21 cents (215)	2.2	11	1	91	428
Fruits: Apples, green, 2 pounds, 10 cents (221)	.5	.....	.....	5	20
Total vegetable food	6.1	34	6	345	1,610
Total food	26.4	156	120	435	3,540

The family here studied were in better circumstances than the majority of those described in this bulletin. The quantity of protein in the food per man per day was largely in excess of that called for by the commonly accepted dietary standard; the energy, however, was very close to that called for by the dietary standard for a man at moderate work. The excess of protein indicates that a considerable reduction might have been made in the amounts of such animal foods as meat, fish, and eggs, which furnished protein rather than energy. At the same time this would have reduced the cost of the ration, owing to the relatively large amount expended for animal foods as compared with vegetable and more particularly cereal foods. The 21 cents expended for tomatoes furnished but little actual nutriment, but doubtless added to the palatability of the diet.

DIETARY STUDY OF A WASHERWOMAN'S FAMILY (NO. 194).

This family consisted of the mother, 55 years old, and two adult children, a son 21 years old and a daughter 36 years old. There were also two children of the latter, girls, one aged 11 and the other 6 years, and two children of another daughter who was out at service, namely, a girl 11 years old and a boy 4 years old. The weights of the members of the family were 135, 140, 160, 80, 42, 75, and 30 pounds, respectively. The father and the two sons-in-law were dissipated and did not live with the family. The persons included in the study were sober and economical, but in very poor circumstances; the children were in rags. All, however, were in good health. The mother and the daughter did washing to pay the rent, and the daughter earned $2.50 a week in addition. The son was a truck driver and earned $7 a week. Food was purchased for cash by the day at the small markets.

The study began April 14, 1897, and continued ten days. The number of meals taken was as follows:

	Meals.
Man	30
Two women (60 meals × 0.8 meal of man), equivalent to	48
Two girls, 11 years old (60 meals × 0.6 meal of man), equivalent to	36
Girl, 6 years old (30 meals × 0.5 meal of man), equivalent to	15
Boy, 4 years old (30 meals × 0.4 meal of man), equivalent to	12
Total number of meals taken equivalent to	141

Equivalent to one man forty-seven days.

TABLE 29.—*Weights and cost of food and nutrients in dietary study No. 194.*

Kinds, amounts, and cost of food for ten days.	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
ANIMAL FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Beef: Shank, fore, 1 pound, 8 cents (23); steak, round, 7.75 pounds, 79 cents (29). Veal: Chops, 0.85 pound, 15 cents (54). Mutton: Side, 4.38 pounds, 56 cents (52)	3.4	24	24	.....	321
Pork: Fresh (as ham), 5 pounds, 33 cents (71); chops, 0.40 pound, 5 cents (60)	.8	8	15	.....	172
Fish: Smelts, fresh, 1.50 pounds, 12 cents (110)	.3	1	.....	.....	4
Eggs, 6.80 pounds, 77 cents (114)	1.6	9	7	.....	102
Butter, 1.25 pounds, 29 cents (118)	.6	.....	10	.....	93
Milk, 37.20 pounds, 84 cents (124)	1.8	12	14	18	253
Total animal food	8.5	54	70	18	945
VEGETABLE FOOD.					
Cereals: Barley, pearled, 0.50 pound, 2 cents (126); bread, 17.31 pounds, 51 cents (134); buns, 15.50 pounds, 75 cents (140); buns, hot cross, 4.32 pounds, 25 cents (141); cake, coffee, 1 pound, 10 cents (143); cake, mixed, 2.20 pounds, 10 cents (142); cake, fruit, 1.50 pounds, 15 cents (145)	4.0	34	19	223	1,231
Sugar, 11 pounds, 52 cents (169)	1.1	.....	.....	106	435
Vegetables: Cabbage, 4.31 pounds, 15 cents (180); carrots, 0.75 pound, 2 cents (182); cucumber pickles, 1 pound, 5 cents (202); greens, soup, 0.44 pound, 6 cents (189); onions, 1 pound, 3 cents, (195); potatoes, 23.25 pounds, 21 cents (204); turnips, 1.61 pounds, 3 cents (218); sauerkraut, 3 pounds, 8 cents (212)	1.3	7	1	48	235
Fruits: Apples, 1.75 pounds, 5 cents (221)	.1	.....	.....	2	9
Total vegetable food	6.5	41	20	379	1,910
Total food	15.0	95	90	397	2,855

The family here studied represents a type of those who need to live as economically as possible. The cost of the food, 15 cents per man per day, was reasonable, but the amounts of protein and energy were small and might have been increased with probable advantage. Had they been increased one-fifth by increasing the amounts of food materials purchased, but keeping the kinds and proportions the same, the cost of the daily ration would have been about 18 cents. The nutritive value of the ration could have been increased without raising the cost by substituting more economical materials for some of those purchased. One of the most expensive items of food used was veal chops at 18 cents a pound. The most economical foods were as usual the cereals, although here there was considerable difference in the relative economy, the buns and cakes being much more costly sources of nutriment than the bread. A considerable variety of fresh vegetables was also used. If two-thirds the cost of these fresh vegetables had been expended for dried beans or peas, if the money expended for buns and cakes had been used to purchase bread at the price paid, and if the veal chops and mutton side had been omitted from the diet and the money spent for them had been expended for round steak at the prices paid, the quantity of protein and energy per man per day would have been increased 39 grams and 575 calories, respectively, without increasing the cost. If at the same time the woman had been able to do her marketing as skillfully as the woman in dietary studies Nos. 31, 155, and 180, still more nutriment would have been obtained for the same money. The changes suggested, it is believed, need not have made the diet less palatable or attractive. Had a still greater reduction in cost seemed necessary it might have been accomplished by diminishing still further the quantity of meat and increasing the amount of cereal foods correspondingly.

DIETARY STUDY OF A STABLEMAN'S FAMILY (NO. 195).

This study was with a family consisting of the father, 44 years of age, the mother, 39 years of age; four daughters, aged respectively 21, 17, 11, and 9 years; and three sons, aged respectively 15, 13, and 4 years. The weights of the members of the family were 170, 135, 145, 155, 75, 60, 120, 100, and 25 pounds, respectively. The father earned $7.50 a week truck driving, but spent a good deal of it for drink. The older daughter earned $7 a week in a box factory, of which she paid $4 to her mother; the second daughter was idle at the time of the study. The oldest boy was a plumber's apprentice, and from his wages paid his mother $4 a week for board. Food was bought by the day on one week's credit at the smaller markets. The members of the family were in good health.

The study began April 16, 1897, and continued ten days. The number of meals taken was as follows:

	Meals.
Man	30
Two women (60 meals × 0.8 meal of man), equivalent to	48
Girl, 17 years old (30 meals × 0.7 meal of man), equivalent to	21
Boy, 15 years old (30 meals × 0.8 meal of man), equivalent to	24
Two children, boy 13 and girl 11 years old (60 meals × 0.6 meal of man), equivalent to	36
Girl, 9 years old (30 meals × 0.5 meal of man), equivalent to	15
Boy, 4 years old (30 meals × 0.4 meal of man), equivalent to	12
Total number of meals taken equivalent to	186

Equivalent to one man sixty-two days.

TABLE 30.—*Weights and cost of food and nutrients in dietary study No. 195.*

Kinds, amounts, and cost of food for ten days.	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
ANIMAL FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Beef: Round, 1 pound, 11 cents (29); shank, fore, 3 pounds, 15 cents (23); shank, hind, 5 pounds, 30 cents (24); steak, round, 5.50 pounds, 52 cents, (29); corned, rib, 12.19 pounds, $1.05 (8); roast, round, 6.81 pounds, 73 cents (22)	4.6	43	63	.....	763
Pork: Bacon, 0.50 pound, 5 cents (59); ham, 5.25 pounds, 75 cents (65); ribs, spareribs, 3.50 pounds, 25 cents (81)	1.7	11	25	.....	278
Fish: Cod, fresh, 1.50 pounds, 10 cents (87)	.2	1	.....	.....	4
Eggs, 7.44 pounds, 53 cents (117)	.9	6	5	.....	71
Butter, 1.38 pounds, 38 cents (118)	.6	.....	9	.....	84
Milk, 20.12 pounds, 58 cents (124)	.9	5	6	7	105
Total animal food	8.9	66	108	7	1,305
VEGETABLE FOOD.					
Cereals: Rice, 0.50 pound, 4 cents (130); bread, 19.45 pounds, 81 cents (134); crackers, soda, 3.36 pounds, 14 cents (156); rolls, 1.25 pounds, 9 cents (164)	1.7	17	4	102	525
Sugar, 7.25 pounds, 37 cents (169)	.6	.....	.....	53	217
Vegetables: Cabbage, 4.26 pounds, 5 cents (180); onions, 1 pound, 1 cent (195); potatoes, 21.19 pounds, 34 cents (204); tomatoes, 8 pounds, 20 cents, (215); turnips, 4.25 pounds, 5 cents (218)	1.1	5	1	36	178
Total vegetable food	3.4	22	5	191	920
Total food	12.3	88	113	198	2,225

As in the preceding study, the quantities of protein and energy were less than are usually regarded as desirable for persons with moderate work; the cost also was quite small. However, the total cost of food during the study was $7.60, or 10 cents more than the total income which the mother had for running expenses. As already indicated, the father drank so that the family received but a portion of his very limited wages, and food was purchased on one week's credit. The prices of the food materials were on the whole larger than were paid for similar materials by some of the other families studied who lived in the same region. The quantity of meats consumed was largely in excess of that used by many families in similar or even better circumstances. The money would have been more economically expended had one-half of that spent for meat been used to purchase cereals, and had the sum expended for the fresh vegetables been diminished one-half. With these changes the protein and energy per man per day would

have been increased by about 10 grams and 625 calories, respectively. If the diet had then been increased by about one-fourth, it is probable that the family would have been better nourished, although so far as could be seen their health at the time of the study was good. Of course, it must be borne in mind that the food consumption during so short a period does not necessarily give a fair indication of the normal food consumption of the family.

DIETARY STUDY OF A TRUCKMAN'S FAMILY (NO. 196).

This study was carried on in a family consisting of the father, 52 years old; his wife, 46 years old; and two children, a boy of 15 and girl of 8 years, all Americans. Their weights were 125, 120, 75, and 50 pounds, respectively. The father, a truckman, had been in poor health and out of work for some time. The woman earned a little by washing, scrubbing, etc. They occupied two rooms, for which they paid $7.50 a month rent. The family appeared poorly nourished. Food was bought in small quantities for cash and there was no visible waste.

The study began April 28, 1897, and continued ten days. The number of meals taken was as follows:

	Meals.
Man	30
Woman (26 meals × 0.8 meal of man), equivalent to	21
Boy, 15 years (30 meals × 0.8 meal of man), equivalent to	24
Girl, 8 years old (29 meals × 0.5 meal of man), equivalent to	14
Total number of meals taken equivalent to	89

Equivalent to one man thirty days.

TABLE 31.—*Weights and cost of food and nutrients in dietary study No. 196.*

Kinds, amounts, and cost of food for ten days.	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
ANIMAL FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Beef: Tripe, 1.69 pounds, 12 cents (38). Mutton: Leg, 2.69 pounds, 34 cents (47)	1.5	11	7	.....	110
Pork: Loin, fresh, 2.13 pounds, 23 cents (61)	.8	4	8	.....	91
Fish: Halibut, fresh, 1 pound, 22 cents (94)	.7	2	1	.....	18
Eggs, 3.50 pounds, 30 cents (114)	1.0	7	5	.....	75
Butter, 1.06 pounds, 24 cents (118)	.8	.....	14	.....	131
Milk, 1.31 pounds, 3 cents (124)	.1	1	1	1	18
Milk, condensed, 3 pounds, 21 cents (125)	.7	4	4	24	152
Total animal food	5.6	29	40	25	595
VEGETABLE FOOD.					
Cereals: Flour, 0.50 pound, 3 cents (131); rice, 0.25 pound, 2 cents (130); bread, 5.82 pounds, 19 cents (134); crackers, fancy, 5 pounds, 50 cents (155); rolls, coffee, 2.25 pounds, 8 cents (143); rolls, sweet, 3 pounds, 22 cents (144)	3.5	21	17	150	859
Sugar, 8.76 pounds, 47 cents (169)	1.6	.....	.....	133	545
Vegetables: Beans, dried, 1.75 pounds, 10 cents (175); onions, 0.25 pound, 2 cents (195); peas, canned, 1 pound, 8 cents (199); potatoes, 4.11 pounds, 5 cents (204); turnips, 1 pound, 3 cents (218)	.9	8	1	29	160
Fruits: Raspberry jelly, 1 pound, 10 cents (231)	.3	.....	.....	9	36
Total vegetable food	6.3	29	18	321	1,600
Total food	11.9	58	58	346	2,195

This study is remarkable for the small amounts of protein and energy which, according to the statistics, were consumed per man per day. The protein was about half and the energy two-thirds the normal amount for a man at moderate work. The cost, 12 cents per man per day, would have been very moderate had the diet been sufficient, but to bring the diet up to the standard by use of the same materials in the same proportions would require an expenditure of from 18 to 24 cents. The food purchases of this family, as a rule, were not marked by wise economy. The meats purchased were the higher priced cuts and the prices per pound were considerably in excess of those paid by some other families for similar cuts. Another evidence of the injudicious selection of food when the income was so limited was the purchase of fancy crackers at 10 cents a pound and sweet rolls at 7.3 cents a pound instead of bread which might have been purchased at 4 cents, or stale bread at 2 cents a pound. The selection of vegetables also was not such as would give the largest amount of nutriment for the expenditure. Dried beans furnished the most nutriment for the money expended.

Had the family purchased less expensive cuts of meat, spent less for crackers, rolls, canned and green vegetables, and more for flour, rice, bread, dried beans, and potatoes, the quantities of protein and energy in the diet might have been increased without increasing the cost. If the same kinds of food as used had been increased in amount by about one-third to one-half, the family would doubtless have been better nourished and the cost would have been but 16 to 18 cents per man per day. All the family seemed poorly nourished and were rather sickly in appearance, hence anything which would increase the quantity of nutriment, even if it detracted to some extent from the variety of the diet, would have been advantageous. If, in addition to the changes already suggested, less had been expended for animal foods and more for cereals the diet would have been rendered still more nutritious although it might not have been quite as appetizing. Of course in cases like this it must be borne in mind that where the mother works out herself she has not the time and opportunity for the small domestic economies possible for a woman who remains at home. Meats, fancy breads and pastries, and a variety of vegetables are easily prepared in such a way as to be appetizing and palatable, while it requires some skill and thought to prepare the more common cereals so that they will be as attractive and appetizing.

DIETARY STUDY OF A HUCKSTER'S FAMILY (NO. 197).

The family here studied consisted of the father, a native of Scotland, 50 years old; the mother, a native of Ireland, 35 years old, and six children, born in America—a girl 14, a boy 12, a boy 10, a girl 8, and a boy 2 years old, and an infant 3 months old. The weights of

the members of the family were 135, 140, 75, 65, 60, 50, 25, and 15 pounds, respectively. The father, a huckster, sold wild flowers and shrubs, making about $4.50 a week. Neither the mother nor the children were able to add anything to the family income. The family occupied two rooms, for which they paid $6.50 rent per month.

The study began April 28, 1897, and continued ten days. The number of meals taken was as follows:

	Meals.
Man	30
Woman (30 meals × 0.8 meal of man), equivalent to	24
Girl, 14 years old (30 meals × 0.7 meal of man), equivalent to	21
Two boys, 12 and 10 years old (60 meals × 0.6 meal of man), equivalent to	36
Girl, 8 years old (30 meals × 0.5 meal of man), equivalent to	15
Boy, 2 years old (30 meals × 0.4 meal of man), equivalent to	12
Infant, equivalent to	9
Total number of meals taken equivalent to	147

Equivalent to one man forty-nine days.

TABLE 32.—*Weights and cost of food and nutrients in dietary study No. 197.*

Kinds, amounts, and cost of food for ten days.	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
ANIMAL FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Beef: Liver, 1.50 pounds, 10 cents (19); drippings, 0.25 pound, 1 cent (13); corned beef, 2 pounds, 25 cents (3). Veal: Head-cheese, 1.50 pounds, 10 cents (67). Mutton: Chops, 2.75 pounds, 36 cents (45)	1.7	13	20	.....	240
Pork: Bacon, 4 pounds, 48 cents (59); lard, 1 pound, 6 cents (69)	1.1	3	32	.....	310
Fish: Cod, fresh, 4 pounds, 24 cents (87); halibut, 3.06 pounds, 18 cents (93); chowder, clam, 6 pounds, 20 cents (86); mussels, pickled, 3 pounds, 15 cents (100)	1.6	12	2	5	88
Eggs, 4.84 pounds, 50 cents (114)	1.0	6	5	.....	71
Butter, 1 pound, 29 cents (118)	.6	.....	8	.....	75
Cheese, 0.50 pound, 6 cents (120)	.1	1	2	.....	23
Milk, 12.50 pounds, 33 cents (124)	.7	4	4	6	78
Total animal food	6.8	39	73	11	885
VEGETABLE FOOD.					
Cereals: Corn meal, 1.50 pounds, 3 cents, (151); oatmeal, 2 pounds, 11 cents (128); rice, 1 pound, 6 cents (130); bread, 28.46 pounds, $1.02 (134); flour, prepared, 3 pounds, 12 cents (133); crullers, 7 pounds, 22 cents (157); macaroni, 1 pound, 8 cents (158)	3.3	38	19	231	1,279
Sugar, 5.37 pounds, 27 cents (169)	.6	.....	.....	50	205
Vegetables: Greens, 4.13 pounds, 15 cents (190); lettuce, 1 pound, 10 cents (194); onions, 1.25 pounds, 5 cents (195); peas, split, 1.50 pounds, 9 cents (200); potatoes, 12.76 pounds, 17 cents (204); potatoes, 1 pound, 1 cent (205); scullions, 1 pound, 10 cents (213); tomatoes, canned, 2 pounds, 7 cents (216)	1.5	7	1	36	186
Total vegetable food	5.4	45	20	317	1,670
Total food	12.2	84	93	328	2,555

This family might be classed among the very poor, the income being but 75 cents a day. The quantity of nutrients per man per day in the food which they consumed was scarcely what would be required, according to the usual standard, by a man at light work, and probably was not sufficient for the needs of the family, for although they appeared to be in good health they were not robust. Had the diet been increased about one-third it would doubtless have more nearly suited the requirements of the people nourished; the cost would then have been a trifle over 18 cents per man per day. The corned beef used was expensive for a family in such circumstances. Equally nutritious meat of similar character could have been purchased at half the price, as was evident from purchases made by other families studied who lived in the same region. The mutton was also perhaps more expensive than the family could afford. The 35 cents spent for clam chowder and pickled mussels would have furnished much more nutriment had it been expended for some of the cheaper cuts of beef. It is also doubtful if the use of so many eggs (3¼ dozen at 16 cents a dozen) was warranted, although they furnished as cheap a source of nutriment as some of the meats used. A considerable variety of cereal products was used, the most expensive being the crullers at 7 cents a pound. The variety of green vegetables was, in this study as in the majority of those here reported, larger than the resources of the family would seem to warrant. Much the same suggestions for improvement as in the previous study could be made.

DIETARY STUDY OF A LONGSHOREMAN'S FAMILY (NO. 198).

The Polish longshoreman's family here studied consisted of the father, 36 years old; the mother, 28 years old; and three children—a girl of 9, a boy of 5 years, and an infant 4 months old. The weights of the members of the family were 215, 165, 75, and 50 pounds, respectively, the weight of the infant not being stated. The father earned $9 a week, and they paid $10 per month rent for three rooms, two of which were light. Provisions were bought in small quantities for cash. The family appeared well nourished.

The study began May 8, 1897, and continued ten days. The number of meals taken was as follows:

	Meals.
Man	30
Woman (30 meals × 0.8 meal of man), equivalent to	24
Girl, 9 years old (30 meals × 0.5 meal of man), equivalent to	15
Boy, 5 years old (30 meals × 0.4 meal of man), equivalent to	12
Infant, equivalent to	9
Total number of meals equivalent to	90

Equivalent to one man thirty days.

TABLE 33.—*Weights and cost of food and nutrients in dietary study No. 198.*

Kinds, amounts, and cost of food for ten days.	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
ANIMAL FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Beef: Steak, sirloin, 4.50 pounds, 54 cents (33); chuck, 4.8 pounds, 47 cents (27); round, 2 pounds, 30 cents (29); soup piece, 2 pounds, 16 cents (23); corned, 3.50 pounds, 35 cents (3). Veal: Loin, 5 pounds, 42 cents (57)	7.5	53	44	.....	626
Pork: Chops, 3.13 pounds, 33 cents (61); trimmings, 12 pounds, $1.20 (82); bacon, 1 pound, 12 cents, (59); ham, smoked, 4.26 pounds, 48 cents (66)	7.1	26	160	.....	1,594
Fish: White, 1.50 pounds, 18 cents (113)	.6	2	1	.....	17
Eggs, 3.44 pounds, 25 cents (117)	.8	6	5	.....	71
Butter, 4 pounds, 80 cents (118)	2.7	1	52	.....	487
Cheese, 2 pounds, 24 cents (120)	.8	8	10	1	130
Cream, 0.44 pound, 4 cents (123a)	.2	.....	1	.....	9
Milk, 50.92 pounds, $1.03 (124)	3.4	26	31	39	555
Milk, condensed, 1 pound, 7 cents (125)	.2	1	1	8	46
Total animal food	23.3	123	305	48	3,535
VEGETABLE FOOD.					
Cereals: Barley, 2 pounds, 10 cents (126); flour, 3.50 pounds, 10 cents (131); rice, 1 pound, 6 cents (130); bread, 42.32 pounds, $1.78 (134); cake, 8.50 pounds, 95 cents (142)	10.0	77	21	496	2,545
Sugars, starches, etc.: Sugar, 12.87 pounds, 59 cents (169); olive oil, 0.44 pound, 4 cents (173)	2.1	.....	6	195	856
Vegetables: Cabbage, 7 pounds, 22 cents (180); horseradish, 0.50 pound, 7 cents (191); onions, 3.50 pounds, 15 cents (195); potatoes, 24.71 pounds, 37 cents (204)	2.7	10	1	79	374
Fruits: Prunes, 4 pounds, 50 cents (237); raisins, 2 pounds, 20 cents (238); jelly, 0.50 pound, 3 cents (231)	2.4	2	1	70	305
Total vegetable food	17.2	89	29	840	4,080
Total food	40.5	212	334	888	7,615

The results of this dietary study are among the most interesting of those here reported. The protein in the ration was nearly double and the energy more than double that of the commonly accepted dietary standard for men at moderate muscular work. It must be borne in mind, however, that the man and the woman were large persons and that the man was engaged at quite active work. Food was purchased not only in large quantity, but also in considerable variety, so that the cost per man per day was unusually high. If it had been desired, the cost could have been reduced in the same way as has been indicated in the discussion of previous studies. The family consumed a large amount of pork trimmings during the study, an average of 1.2 pounds a day, and an unusually large quantity of bread, averaging $4\frac{1}{4}$ pounds a day. One-third the protein and one-third the energy of the diet were obtained from these two articles, at a cost of about one-fourth of the total. Even making allowance for the activity and size of the members of the family, it would seem that the diet was larger than was called for, and that a material reduction might have been made. It is difficult to understand how this food consumption, costing $8.50 per week, could have been maintained for any length of

time on the income of the father, which was but $9 a week. It has been observed that among the families studied, and especially those of foreign birth, there was at times during dietary studies a tendency to change somewhat the ordinary mode of living. This change is sometimes one of increased and sometimes one of decreased food consumption. In the present case it seems hardly probable that the study represents the average normal food consumption of this family.

DIETARY STUDY OF A CARPENTER'S FAMILY (NO. 199).

This study was made in a German family comprising the father, 48 years old, weighing 160 pounds; the mother, 48 years old, weighing 150 pounds; their daughter, 10 years old, weighing 75 pounds, and a boy boarder, 5 years old, weighing 40 pounds. All were in good health. The father, a carpenter, had steady work, but at rather low wages, earning $9 per week. The mother earned $1.50 per week washing. The young boy who lived in the family brought in $1.25 a week for board. During half of the study he was away visiting his father. The family occupied three rooms, paying $11 a month rent. Provisions were bought daily for cash at the small markets. The food was prepared in the manner to which they were accustomed in Germany.

The study began May 11, 1897, and continued ten days. The number of meals taken was as follows:

	Meals.
Man	21
Woman (30 meals × 0.8 meal of man), equivalent to	24
Girl, 10 years old (30 meals × 0.6 meal of man), equivalent to	18
Boy, 5 years old (12 meals × 0.4 meal of man), equivalent to	5
Total number of meals taken equivalent to	68

Equivalent to one man twenty-three days.

TABLE 34.—*Weights and cost of food and nutrients in dietary study No. 199.*

Kinds, amounts, and cost of food for ten days.	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
ANIMAL FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Beef: Chopped, 0.75 pound, 8 cents (29); shank pieces, 3.13 pounds, 25 cents (23); bologna, 1 pound, 10 cents (1); tripe, 2 pounds, 12 cents (38); liver, 1.50 pounds, 12 cents (19)	2.9	25	12	1	220
Pork: Shoulder, 3.50 pounds, 35 cents (77); salt, 1.14 pounds, 8 cents (73); shoulder, smoked, 1.50 pounds, 15 cents (79); lard, 0.50 pound, 4 cents (69)	3.0	14	52	.....	550
Fish: Flounders, 3 pounds, 15 cents (92)	.6	3	.....	.....	10
Eggs, 3.19 pounds, 27 cents (117)	1.1	7	6	.....	85
Butter, 0.25 pound, 7 cents (118)	.3	.....	4	.....	35
Cheese, 1 pound, 10 cents (120)	.4	5	7	.....	85
Milk, 10.32 pounds, 25 cents (124)	1.0	7	8	10	135
Milk, condensed, 1.75 pounds, 14 cents (125)	.6	3	3	19	120
Total animal food	9.9	64	92	30	1,240

TABLE 34.—*Weights and cost of food and nutrients in dietary study No. 199*—Continued.

Kinds, amounts, and cost of food for ten days.	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protien.	Fat.	Carbohydrates.	Fuel value.
VEGETABLE FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Cereals: Oatmeal, 2 pounds, 10 cents (129); rice, 0.50 pound, 4 cents (130); flour, 2.86 pounds, 15 cents (131); bread, 5.94 pounds, 17 cents (134); cake, coffee, 2 pounds, 10 cents (143); cracker dust, 0.50 pound, 5 cents (154); rolls, wheat, 1.37 pounds, 8 cents (164); pie, apple, 0.50 pound, 5 cents (160); pie, custard, 1 pound, 10 cents (161)	3.6	32	12	196	1,045
Sugar, 1.69 pounds, 10 cents (169)	.4	.....	.....	33	135
Vegetables: Cucumbers, 1 pound, 9 cents (187); greens, 0.50 pound, 2 cents (188); onions, 1 pound, 5 cents (195); potatoes, 17.50 pounds, 19 cents (204); tomatoes, canned, 2 pounds, 8 cents (216); turnips, 1.19 pounds, 2 cents (219)	2.0	9	.....	70	325
Total vegetable food	6.0	41	12	299	1,505
Total food	15.9	105	104	329	2,745

The quantity of protein in the food consumed per man per day by this family was not far from the average found in the studies of farmers and mechanics in comfortable circumstances in different parts of the country. The amount of energy, however, was small. If the diet had been increased to some extent by the use of more oatmeal, rice, flour, and bread, and if some of the money expended for green vegetables and canned tomatoes had been used to buy more cereal foods, the diet could have been increased easily as regards both protein and energy with but little, if any, increase in the cost per man per day.

DIETARY STUDY OF A PAINTER'S FAMILY (NO. 200).

This family consisted of the father, 23 years old; the mother, 20 years old; an infant, 5 months old, and 2 male relatives (boarders), one 28 and the other 23 years of age. The weights of the adult members of the family were 135, 89, 135, and 140 pounds, respectively. The father earned $7 a week painting chairs in a factory. The two boarders together paid $6 a week for board; one of them was idle during the time of the study. The family is representative of a class known locally as "furnished roomers." They paid $2.25 per week for a single room 12 by 6 feet, with a bed, stove, table, and two chairs. There was no waste, all crumbs even being used up. Employment was unsteady, and the family were always in debt.

The study began May 22, 1897, and continued ten days. The number of meals taken was as follows:

	Meals.
Three men	89
Woman (30 meals × 0.8 meal of man), equivalent to	24
Infant, equivalent to	9
Total number of meals taken equivalent to	122

Equivalent to one man forty-one days.

TABLE 35.—*Weights and cost of food and nutrients in dietary study No. 200.*

Kinds, amounts, and cost of food for ten days.	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
ANIMAL FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Beef: Steak, chuck, 2 pounds, 20 cents (27); frankfurters, 2 pounds, 20 cents (14); meat, 1.50 pounds, 16 cents (20); steak, round, 2 pounds, 23 cents (29); skirting, 3 pounds, 15 cents (36); stew piece, 0.75 pound, 6 cents (24). Mutton, 0.75 pound, 6 cents (44)	2.6	22	21	.....	285
Pork: Chops, 5 pounds, 47 cents (61)	1.1	7	13	.....	150
Eggs, 0.75 pound, 5 cents (117)	.1	1	1	.....	13
Butter, 2.75 pounds, 62 cents (118)	1.5	.....	26	.....	241
Milk, 1 pound, 2 cents (124)	.1	.....	.....	1	4
Milk, condensed, 2.50 pounds, 17 cents (125)	.4	3	2	15	92
Total animal food	5.8	33	63	16	785
VEGETABLE FOOD.					
Cereals: Bread, 20.50 pounds, 80 cents (134); bread, rye, 2 pounds, 10 cents (136); cake, coffee, 0.25 pound, 2 cents (143); rolls, plain, 1.75 pounds, 10 cents (164); rolls, sweet, 1 pound, 5 cents (144)	2.6	26	5	152	776
Sugar, 4.75 pounds, 28 cents (169)	.7	.....	.....	52	214
Vegetables: Corn, canned, 3 pounds, 20 cents (185); onions, 0.37 pound, 3 cents (195); potatoes, 28 pounds, 28 cents (204); radishes, 1.61 pounds, 11 cents (208); tomatoes, canned, 1 pound, 8 cents (216)	1.7	8	1	65	310
Total vegetable food	5.0	34	6	269	1,300
Total food	10.8	67	69	285	2,085

The quantities of protein and energy consumed per man per day by this family were but little more than half the amount ordinarily considered necessary for men at moderate work, and undoubtedly more food than this would be required to maintain the family in good physical condition. A certain grade of work might of course be done upon a small amount of protein and energy; but it has been observed that within certain limits the character of the work improves as the diet becomes more liberal.

The family was very poor, always in debt, and the utmost economy in expenditure of all kinds was necessary. But while the cost of the food per man per day was small, the expenditures were not in all cases the wisest, for a more nutritious diet could have been purchased for the same amount of money. The relative economy of the materials purchased during this study is illustrated by the figures in the following table, showing the quantities of nutrients and energy in 10 cents' worth of each at the prices paid per pound.

TABLE 36.—*Cost of food materials per pound, and amounts of protein and energy obtained for 10 cents in each, in dietary study No. 200.*

Kind of food material.	Price per pound.	In 1 pound.		Amount bought for 10 cents.			Total amount expended during study.
		Protein.	Fuel value.	Total food.	Protein.	Fuel value.	
Beef:	*Cents.*	*Pound.*	*Calories.*	*Pounds.*	*Pound.*	*Calories.*	*Cents.*
Chuck steak	10.0	0.166	735	1.00	0.17	725	20
Frankfurters	10.0	.196	1,170	1.00	.20	1,165	20
Round steak	11.5	.190	895	.87	.17	775	23
Skirting	5.0	.161	1,040	2.00	.32	2,075	15
Stew piece	8.0	.096	405	1.25	.12	505	6
Mutton, stew piece	8.0	.135	1,445	1.25	.17	1,805	6
Pork, chops	9.4	.134	1,270	1.06	.14	1,355	47
Butter	22.5	.010	3,605	.44	.....	1,600	62
Milk, condensed	6.8	.088	1,520	1.47	.13	2,235	17
Bread:							
Wheat	3.9	.092	1,215	2.56	.23	3,110	80
Rye	5.0	.090	1,180	2.00	.18	2,365	10
Rolls	5.7	.097	1,470	1.75	.17	2,575	10
Rolls, sweet	5.0	.081	1,450	2.00	.16	2,905	5
Sugar	5.9	.....	1,860	1.70	.....	3,155	28
Corn, canned	6.7	.028	455	1.50	.04	680	20
Potatoes	1.0	.022	385	10.00	.22	3,875	28
Green vegetables: Onions, radishes	7.0	.....	.....	1.43	.02	210	14
Tomatoes, canned	8.0	.012	105	1.25	.01	130	8

The most expensive materials purchased in any quantity were the butter, beefsteak, canned corn, and radishes. The variety and amount of animal food and of green vegetables might have been reduced and the money thus saved used to purchase dried legumes, oatmeal, rice, flour, and bread. Apparently this would not have materially reduced the palatability of the diet, yet the quantity of nutrients would have been increased without increasing the cost.

Had the family spent their money for food as wisely as those described in dietary studies Nos. 178 and 185, they would not have been so poorly nourished. The use of stale bread instead of rolls, and of oatmeal and dried beans instead of canned corn, would have resulted in a considerable increase of nutriment, but not of cost.

DIETARY STUDY OF AN EXPRESSMAN'S FAMILY (NO. 201).

This study was made in a family comprising the father, 30 years old, weighing 135 pounds; the mother, 25 years old, weighing 130 pounds; a girl, 11 years old, weighing 75 pounds; a girl, 9 years old, weighing 60 pounds; a boy, 7 years old, weighing 55 pounds; a girl, 5 years old, weighing 38 pounds, and a boy 3 years and an infant 10 months old, whose weights were not stated. The father, an expressman, who owned his horse and wagon, earned on an average $10 a week, although his income was variable. The mother apparently understood nothing about the purchasing and preparation of food; the home was poorly managed, and the table unattractive. Each member of the family had a small insurance, which required about $1 a month to maintain. They occupied three rooms, for which they paid $12 per month rent.

The study began May 22, 1897, and continued ten days. The number of meals taken was as follows:

	Meals.
Man	30
Woman (30 meals × 0.8 meal of man), equivalent to	24
Girl, 11 years old (30 meals × 0.6 meal of man), equivalent to	18
Girl 9 and boy 7 years old (60 meals × 0.5 meal of man), equivalent to	30
Girl 5 and boy 3 years old (60 meals × 0.4 meal of man), equivalent to	24
Infant, 10 months old, equivalent to	9
Total number of meals taken equivalent to	135

Equivalent to one man forty-five days.

TABLE 37.—*Weights and cost of food and nutrients in dietary study No. 201.*

Kinds, amounts, and cost of food for ten days.	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
ANIMAL FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Beef: Steak, chuck, 11 pounds, $1.11 (27); round, chopped, 7.99 pounds, 84 cents (29); shin, 2 pounds, 12 cents (23); corned, 6 pounds, 35 cents (3)	5.4	45	37	.....	529
Pork: Loin, fresh, 4.50 pounds, 41 cents (68); bacon, 1 pound, 10 cents (59)	1.1	7	18	.....	196
Eggs, 2.43 pounds, 30 cents (114)	.7	3	3	.....	40
Butter, 3 pounds, 66 cents (118)	1.5	0	26	.....	242
Milk, 3.76 pounds, 11 cents (124)	.2	1	1	2	22
Milk, condensed, 6 pounds, 42 cents (125)	.9	6	5	33	206
Total animal food	9.8	62	90	35	1,235
VEGETABLE FOOD.					
Cereals: Bread, 20.40 pounds, $1 (134); buns, 1.25 pounds, 5 cents (140); cakes, 2 pounds, 20 cents (149); cakes, coffee, 1 pound, 10 cents (143); cakes, sweet, 2.50 pounds, 20 cents (142); crackers, 0.25 pound, 2 cents (152); crullers, 7.75 pounds, 65 cents (157); rolls, water, 4.75 pounds, 25 cents (166); pie, apple, 0.50 pound, 5 cents (160)	5.6	33	27	222	1,297
Sugar, 10.63 pounds, 53 cents (169)	1.2	.....	.....	107	439
Vegetables: Cabbage, 3 pounds, 5 cents (180); onions, 1.50 pounds, 8 cents (195); potatoes, 7.62 pounds, 10 cents (204); rhubarb, 3 pounds, 5 cents (210); soup greens, 1 pound, 2 cents (188)	.7	3	1	19	100
Fruits: Apples, 1 pound, 10 cents (221); strawberries, 2 pounds, 10 cents (239)	.4	0	0	2	9
Total vegetable food	7.9	36	28	350	1,845
Total food	17.7	98	118	385	3,080

As regards the amounts of nutrients eaten little need be said concerning the results of this study. The quantity of protein and energy was not greatly below that found in the diet of working people in different parts of the United States and the cost was not large. By more judicious use of some materials at the prices paid and the substitution of more economical materials for some of those used the quantity of nutrients might have been sufficiently increased to meet all demands of the body without increasing the cost. Care and skill in the preparation of the food could have made this diet much more attractive.

DIETARY STUDY OF A WAITER'S FAMILY (NO. 204).

This family comprised only the husband, 40 years old, and his wife, 35 years old, weighing 175 and 125 pounds, respectively. The husband was a waiter in a restaurant, and earned $7 a week and board. He was at home for but three meals during the time of the study. The couple occupied one furnished room, for which they paid $2.25 per week rent. Provisions were bought daily at the small markets. In the opinion of those making the study the couple belonged to the lowest type found in the city among those who claim to have a home.

The study began June 22, 1897, and continued ten days. The number of meals taken was as follows:

	Meals.
Man	3
Woman (30 meals × 0.8 meal of man), equivalent to	24
Total number of meals taken equivalent to	27

Equivalent to one man nine days.

TABLE 38.—*Weights and cost of food and nutrients in dietary study No. 204.*

Kinds, amounts, and cost of food for ten days.	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
ANIMAL FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Beef: Beef, 0.75 pound, 8 cents (20); steak, sirloin, 0.50 pound, 6 cents (33). Mutton, 0.75 pound, 7 cents (43b)	2.3	15	20	.....	247
Pork: Chops, 2.37 pounds, 30 cents (61); spareribs, 3 pounds, 18 cents (61); bacon, 0.50 pound, 6 cents (59)	6.0	38	81	.....	909
Eggs, 1.02 pounds, 10 cents (115)	1.1	8	5	.....	79
Butter, 0.43 pound, 9 cents (118)	1.0	0	19	.....	177
Milk, 7 pounds, 16 cents (124)	1.8	12	14	18	253
Total animal food	12.2	73	139	18	1,665
VEGETABLE FOOD.					
Cereals: Flour, 1 pound, 5 cents (131); bread, 1 pound, 5 cents (134); bread, dry, 0.25 pound, 1 cent (134); bread, rye, 1.50 pounds, 5 cents (137); biscuit, 0.25 pound, 2 cents (139)	2.0	20	3	115	581
Sugar, 2 pounds, 10 cents (169)	1.1	.....	.....	101	414
Vegetables: Potatoes, 14.44 pounds, 31 cents (204); tomatoes, canned, 2 pounds, 10 cents (216)	4.6	17	1	138	645
Total vegetable food	7.7	37	4	354	1,640
Beverages: Beer, 13.50 pounds, 45 cents (243)	5.0	3	.....	78	335
Total food	24.9	113	143	450	3,640

The quantities of protein and energy in this study approached quite nearly to the standard for persons at moderate work. The cost, however, 25 cents per man per day, might easily have been reduced by more careful selection of food, if such reduction had been desired. It should be mentioned, however, that the cost includes one item which doubtless should be included in many of the other studies, but for various reasons could not be ascertained, namely, the amount paid for beer. The family used, on an average, about a quart a day.

DIETARY STUDY OF A LANDLORD'S FAMILY (NO. 205).

This family consisted of a man 55 years old, weighing 200 pounds, and his wife 50 years old, weighing 175 pounds. The couple lived very simply, occupying two rooms. They rented twenty-five rooms for which they paid $80 per month, and sublet the rooms for about $2 or $3 each per week. Their income was probably not far from $200 per month. They did all the work in the house themselves and were very thrifty, owning several pieces of property outside of the city. Provisions were bought for cash partly in quantity and partly by the day.

The study began June 1, 1897, and continued ten days. The number of meals taken was as follows:

	Meals.
Man	30
Woman (30 meals × 0.8 meal of man), equivalent to	24
Visitor	2
Total number of meals taken equivalent to	56

Equivalent to one man nineteen days.

TABLE 39.—*Weights and cost of food and nutrients in dietary study No. 205.*

Kinds, amounts, and cost of food for ten days.	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
ANIMAL FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Beef: Steak, 0.75 pound, 10 cents (33); round, 6 pounds, 87 cents (29); sirloin, 1 pound, 16 cents (33).	5.9	34	25	.....	372
Pork: Ham, smoked, 4 pounds, 48 cents (66); headcheese, 1 pound, 10 cents (67)	3.1	18	40	.....	446
Eggs, 3.94 pounds, 38 cents (115)	2.0	14	10	.....	150
Butter, 1.75 pounds, 36 cents (118)	1.9	1	35	.....	329
Cheese, 1 pound, 10 cents (120)	.5	6	8	1	103
Cheese, cottage, 1.50 pounds, 5 cents (122)	.3	7	10	0	121
Milk, 19.69 pounds, 30 cents (124)	1.6	16	19	24	341
Milk, condensed, 1.50 pounds, 11 cents (125)	.6	3	3	19	118
Total animal food	15.9	99	150	44	1,980
VEGETABLE FOOD.					
Cereals: Flour, 2 pounds, 10 cents (131); flour, prepared, 1.50 pounds, 5 cents (133); bread, 8.13 pounds, 42 cents (134); bread, rye, 1.50 pounds, 5 cents (136); cake, 0.88 pound, 10 cents (149); rolls, water, 0.25 pound, 1 cent (166); rolls, Vienna, 0.75 pound, 5 cents (165); pie, lemon, 0.50 pound, 10 cents (162)	4.6	34	7	215	1,086
Sugars, starches, etc.: Cornstarch, 0.56 pound, 5 cents (172); sugar, 6.25 pounds, 27 cents (169)	1.7	.....	.....	161	660
Vegetables: Cabbage, 1 pound, 3 cents (180); cucumbers, 0.50 pound, 2 cents (187); onions, 2.50 pounds, 9 cents (195); potatoes, 10.10 pounds, 29 cents (204); radishes, 0.50 pound, 1 cent (209); tomatoes, 1 pound, 5 cents (215); tomatoes, canned, 4 pounds, 13 cents (216); pickles, cucumber, 0.25 pound, 1 cent (202)	3.3	8	1	57	276
Fruits: Lemons, 0.25 pound, 2 cents (233); strawberries, 1.19 pounds, 9 cents (239)	.6	0	0	2	8
Total vegetable food	10.2	42	8	435	2,030
Total food	26.1	141	158	479	4,010

The daily food consumption per man per day in this study was considerably in excess of the ordinary standard for a man at moderate muscular work. The weights of both man and woman were, however, above the average, and it is very likely that they required more than the average quantities of nutrients, judging by what has been found with other families in good health who performed similar amounts of work. It seems probable that the dietary could have been reduced about one-eighth and still have been sufficient for the needs of the consumers. Such suggestions for changes are based on theoretical considerations. The fact is recognized that individuals vary considerably in their requirements. However, the changes suggested in this and other studies seem warranted on the basis of average results. It is interesting to note that, in spite of the fact that the couple were quite well-to-do, the amount paid for food, 26 cents per man per day, was not excessive.

DIETARY STUDY OF A CARETAKER'S FAMILY (NO. 206).

This family consisted of the mother, born in Ireland, and three children born in America; the mother was 36 years old, and weighed 139 pounds; one daughter 19 years old weighed 110 pounds, and the other, 17 years old, weighed 100 pounds; the weight of the 4-year-old son was not reported. The mother earned $16 a month cleaning offices. The elder daughter earned $7 a week as telephone operator, and the younger daughter earned $3 a week as book folder. The family paid $9 per month for the rent of three rooms. During three days of the study they had a poor woman helping about the house, who took her meals with them. Provisions were bought by the day for cash at the small markets.

The study began June 15, 1897, and continued ten days. The number of meals taken was as follows:

	Meals.
Three women (63 meals × 0.8 meal of man), equivalent to	51
Girl, 17 years old (30 meals × 0.7 meal of man), equivalent to	21
Boy, 4 years old (30 meals × 0.4 meal of man), equivalent to	12
Visitor	1
Total number of meals taken equivalent to	85

Equivalent to one man twenty-eight days.

TABLE 40.—*Weights and cost of food and nutrients in dietary study No. 206.*

Kinds, amounts, and cost of food for ten days.	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
ANIMAL FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Beef: Steak, round, 3.25 pounds, 48 cents (29); sirloin, 1 pound, 15 cents (33); cottolene, 0.75 pound, 8 cents (12)	2.5	13	21	.....	249
Pork: Spareribs, neck, 2.25 pounds, 8 cents (80); spareribs, 6.62 pounds, 47 cents (81); ham, boiled, 0.50 pound, 10 cents (64); ham, smoked, 3 pounds, 35 cents (66); frankfurters, 0.25 pound, 4 cents (14)	3.7	34	62	.....	716
Fish: Cod, fresh, 0.75 pound, 7 cents (87)	.3	1	0	.....	4
Eggs, 0.87 pound, 10 cents (115)	.4	2	2	.....	27
Butter, 2 pounds, 44 cents (118)	1.6	0	28	.....	260
Milk, 22.78 pounds, 63 cents (124)	2.3	12	15	18	263
Buttermilk, 2.50 pounds, 4 cents (119)	.1	1	0	2	12
Milk, condensed, 1 pound, 7 cents (125)	.2	2	1	9	54
Total animal food	11.1	65	129	29	1,585
VEGETABLE FOOD.					
Cereals: Bread, 14.75 pounds, 75 cents (134); cakes, coffee, 1 pound, 10 cents (143); cakes, sweet, 0.50 pound, 5 cents (149); crackers, soda, 0.50 pound, 4 cents (156); wheat, rolls, 4.50 pounds, 5 cents (167)	3.5	31	6	192	971
Sugars, starches: Cocoa, 0.50 pound, 22 cents (171); sugar, 8.50 pounds, 40 cents (169)	2.2	2	2	141	605
Vegetables: Cabbage, 6.25 pounds, 15 cents (180); cauliflower, 2.94 pounds, 10 cents (183); cucumbers, 1 pound, 3 cents (186); onions, 2 pounds, 5 cents (195); peas, green, 0.75 pound, 5 cents (201); potatoes, 12.82 pounds, 38 cents (204)	2.7	8	1	50	247
Fruits: Apricots, fresh, 0.50 pound, 4 cents (224); cherries, 0.50 pound, 4 cents (227); gooseberries, 1.50 pounds, 8 cents (229); lemons, 0.75 pound, 5 cents (233); peaches, preserved, 1 pound, 10 cents (235); raspberries, jam, 1.50 pounds, 16 cents (240); strawberries, 2 pounds, 20 cents (239); watermelons, 0.50 pound, 3 cents (241)	2.5	1	1	24	112
Total vegetable food	10.9	42	10	407	1,935
Total food	22.0	107	139	436	3,520

The quantities of protein and energy per man per day in this study are about equal to those found on the average in the dietary of farmers, mechanics, and other working people in comfortable circumstances in various parts of the country. The cost, 22 cents per man per day, was not excessive for the kinds and amounts of food purchased. If the family had so desired, the expense could have been reduced to some extent by a different selection of food materials.

DIETARY STUDY OF A SAILOR'S FAMILY (NO. 209).

This study was made in a family comprising the father, 50 years old; the mother, 39 years old; three boys, one 17, one 5, and one 3 years of age, and two girls, one 15 and the other 10 years of age. The weights of the members of the family were 150, 200, 100, 85, 25, 88, and 50 pounds, respectively. All were in good health. The father worked on a tug boat, earning $30 a month. The oldest son was a porter and paid $4.50 a week to his mother for board. The family

occupied three rooms, for which they paid $11.50 per month rent. Provisions were purchased daily at the small markets for cash.

The study began June 15, 1897, and continued ten days. The number of meals taken was as follows:

	Meals.
Man	23
Woman (30 meals × 0.8 meal of man), equivalent to	24
Boy, 17 years old (30 meals × 0.8 meal of man), equivalent to	24
Girl, 15 years old (30 meals × 0.7 meal of man), equivalent to	21
Girl, 10 years old (23 meals × 0.6 meal of man), equivalent to	14
Boy, 5 years old (23 meals × 0.4 meal of man), equivalent to	9
Boy, 3 years old (30 meals × 0.4 meal of man), equivalent to	12
Total number of meals taken equivalent to	127

Equivalent to one man forty-two days.

TABLE 41.—*Weights and cost of food and nutrients in dietary study No. 209.*

Kinds, amounts, and cost of food for ten days.	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
ANIMAL FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Beef: Steak, skirt, 3.50 pounds, 24 cents (32); shin, 2 pounds, 10 cents (23); shank, 4.50 pounds, 25 cents (24). Mutton, 9.75 pounds, $1 (52)	3.8	32	42	.....	522
Pork: Chops, 5 pounds, 50 cents (61); spareribs, 3 pounds, 32 cents (61)	2.0	12	21	.....	244
Eggs, 3.70 pounds, 38 cents (115)	.9	6	4	.....	62
Butter, 1.50 pounds, 30 cents (118)	.7	0	14	.....	130
Cheese, 0.50 pound, 8 cents (121)	.2	1	2	.....	23
Milk, 16.34 pounds, 39 cents (124)	.9	6	7	9	126
Milk, condensed, 1 pound, 7 cents (125)	.2	1	1	6	38
Total animal food	8.7	58	91	15	1,145
VEGETABLE FOOD.					
Cereals: Barley, 0.44 pound, 2 cents (126); flour, 2.38 pounds, 7 cents (131); bread, 3.50 pounds, 22 cents (134); bread, stale, 11.25 pounds, 28 cents (138); crullers, 5 pounds, 35 cents (157); cakes, 3 pounds, 25 cents (149); doughnuts, 1.50 pounds, 10 cents (157); rolls, water, 2 pounds, 10 cents (166); pie, apple, 0.39 pound, 5 cents (160)	3.4	29	21	179	1,049
Sugars, starches, etc.: Molasses, 3.50 pounds, 8 cents (170); sugar, 3.25 pounds, 16 cents (169)	.6	1	.....	62	259
Vegetables: Beans, 2 pounds, 9 cents (176); corn, canned, 3 pounds, 12 cents (185); greens (soup), 2 pounds, 7 cents (188); onions, 1.25 pounds, 5 cents (195); potatoes, 15.88 pounds, 22 cents (204); peas, green, 0.75 pound, 10 cents (201); tomatoes, canned, 4 pounds, 12 cents (216)	1.8	7	1	47	232
Total vegetable food	5.8	37	22	288	1,540
Total food	14.5	95	113	303	2,685

This family were apparently in good health and it may be that the food was sufficient. It is probable, however, that had there been a little more protein and considerable more energy the diet would have been more suited to their needs. With an increase of the same kinds of food materials the cost would necessarily have been greater, but had

the increased expenditure been for flour, bread, dried legumes, etc., the cost of the diet would not have been proportionately increased. Thus, if they had purchased 2 pounds more of beans and 22½ pounds of stale bread in addition to the other foods used, the diet would have furnished 122 grams of protein and 3,375 calories of energy per man per day, at a cost of 16 cents. Had they omitted the canned tomatoes, corn, soup greens, and green peas the expense would have been reduced 1 cent per man per day, with a reduction of only 2 grams of protein and 64 calories of energy. The cost of the diet was very moderate and in this, as in other cases, the family were justified in spending a sum reasonable in proportion to their income to render the diet attractive and palatable.

DIETARY STUDY OF A HOUSEKEEPER'S FAMILY (NO. 210).

This family consisted of the mother, 54 years of age; two adult sons, one 31 and the other 27 years old; two daughters, one 18 and the other 15 years old; and three grandchildren, a girl of 9, a boy of 6, and girl of 4 years. The mother, German born, acted as housekeeper or janitor for the building in which they lived, thus paying the rent of their flat, which was valued at $11.50 per month. The sons were both at work, the younger earning $12 a week. The older son paid $3.50 a week for his board. The older of the two daughters earned $5 a week in a flower store, and the younger $2.50 a week book folding. Food was purchased daily for cash. The family were not in the best of health; none of the members seemed strong.

The study began June 20, 1897, and continued ten days. The number of meals taken was as follows:

	Meals.
Two men	51
Two women (60 meals × 0.8 meal of man), equivalent to	48
Girl, 15 years old (30 meals × 0.7 meal of man), equivalent to	21
Two children, girl 9 and boy 6 years old (51 meals × 0.5 meal of man), equivalent to	26
Child, 4 years old (30 meals × 0.4 meal of man), equivalent to	12
Total number of meals taken equivalent to	158

Equivalent to one man fifty-three days.

TABLE 42.—*Weights and cost of food and nutrients in dietary study No. 210.*

Kinds, amounts, and cost of food for ten days.	Cost, nutrients, and fuel value of food per man per day.				
	Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
ANIMAL FOOD.	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
Beef: Steak, chuck, 5.50 pounds, 51 cents (27); bologna, 1 pound, 5 cents (1). Mutton, 5.50 pounds, 65 cents (52)	2.3	17	20	.....	256
Pork: Head-cheese, 1 pound, 10 cents (67); loin, 7 pounds, 70 cents (61); bacon, 1 pound, 10 cents (59); ham, boiled, 0.50 pound, 10 cents (64)	1.9	12	24	.....	273
Fish: Clam chowder, 2 pounds, 10 cents (86); salmon, 1 pound, 10 cents (104); weak (fresh), 6 pounds, 30 cents (112a); sturgeon, 0.50 pound, 10 cents (112)	1.1	7	2	1	52
Butter, 1.75 pounds, 42 cents (118)	.....	.....	13	.....	121
Milk, 25.72 pounds, 60 cents (124)	1.9	7	9	11	158
Total animal food	7.2	43	68	12	860
VEGETABLE FOOD.					
Cereals: Bread, 15.25 pounds, 63 cents (134); bread, rye, 3.50 pounds, 15 cents (136); cake, 3 pounds, 30 cents (149); doughnuts, 1 pound, 5 cents (157); rolls, 1.50 pounds, 10 cents (166)	2.3	18	6	113	592
Sugar, 4 pounds, 21 cents (169)	.4	.....	.....	34	139
Vegetables: Beans, 1 pound, 4 cents (176); greens, soup, 0.50 pound, 1 cent (188); onions, 0.50 pound, 2 cents (195); potatoes, 13.60 pounds, 30 cents (204); sauerkraut, 4.50 pounds, 20 cents (212); tomatoes, canned, 2 pounds, 8 cents (216)	1.2	4	1	26	132
Fruits: Apple butter, 0.50 pound, 4 cents (223)	.1	0	.....	3	12
Total vegetable food	4.0	22	7	176	875
Total food	11.2	65	75	188	1,735

This family was certainly insufficiently nourished. Like the family in dietary study No. 158 and that in No. 200, the diet furnished only little over half the normal amounts of protein and energy. It is not surprising, in view of this fact, that the family did not appear strong and robust. While there were no particular extravagances in the diet, the food materials could have been selected much more wisely. The suggestions which have been given in connection with some of the preceding studies apply equally well in this case. Under the conditions it appears that choice must be made between variety of food and quantity of nutrients, as the sum available for food was not great enough to secure both. The mother had comparatively little time to devote to the preparation of the food and to marketing, which doubtless rendered it more difficult in this case to secure the greatest possible returns for the money expended.

The relative economy of the different materials used is shown in the table following, giving the quantities of nutrients and energy in 10 cents' worth of each at the prices paid per pound.

TABLE 43.—*Cost of food materials per pound, and amounts of protein and energy obtained for 10 cents in each, in dietary study No. 210.*

Kind of food material.	Price per pound.	In 1 pound.		Amounts bought for 10 cents.			Total amount expended during study.
		Protein.	Fuel value.	Total food.	Protein.	Fuel value.	
	Cents.	*Pound.*	*Calories.*	*Pounds.*	*Pound.*	*Calories.*	*Cents.*
Beef, chuck steak	9.3	0.166	735	1.08	0.18	790	51
Mutton	11.8	.192	1,560	.85	.14	1,315	65
Pork:							
Head-cheese	10.0	.195	1,790	1.00	.20	1,790	10
Loin	10.0	.134	1,270	1.00	.14	1,275	70
Bacon	10.0	.091	2,795	1.00	.09	2,800	10
Boiled ham	20.0	.202	1,320	.50	.10	655	10
Fish:							
Clam chowder	5.0	.018	195	2.00	.04	380	10
Salmon	10.0	.195	680	1.00	.20	680	10
Weakfish	5.0	.086	205	2.00	.17	415	30
Sturgeon	20.0	.193	950	.50	.09	475	10
Butter	24.0	.010	3,605	.42	.....	1,505	42
Milk	2.3	.033	325	4.35	.14	1,385	60
Bread	4.1	.092	1,215	2.44	.22	2,935	63
Rye bread	4.3	.090	1,180	2.33	.21	2,760	15
Cake	10.0	.063	1,675	1.00	.06	1,675	30
Doughnuts	5.0	.067	2,000	2.00	.13	4,015	5
Rolls	6.7	.090	1,300	1.50	.13	1,950	10
Sugar	5.3	.....	1,860	1.89	.....	3,545	21
Green vegetables: Beans, greens, and onions	3.5	.....	.....	2.86	.10	885	7
Potatoes	2.2	.022	385	4.55	.10	1,755	30
Sauerkraut	4.4	.017	125	2.25	.04	280	20
Tomatoes, canned	4.0	.012	105	2.50	.03	260	8

Among the least economical foods in this study may be mentioned boiled ham at 20 cents a pound, clam chowder at 10 cents a quart, sturgeon at 20 cents a pound, cake at 10 cents a pound, sauerkraut at 10 cents a quart, and canned tomatoes at 8 cents a can. The most economical food was bread, but even this might have been purchased cheaper, judging by the facts brought out in other studies.

SUMMARY AND DISCUSSION.

The financial circumstances of the families included in the dietary studies here reported varied widely. The regular income of one family was such that they might be called comfortably well-to-do; a few others had means at least sufficient for their actual needs, while there were some whose total income during the period of study was not equal to the cost of food alone. The large majority of them were in such circumstances that in all their purchases it was necessary that every cent should count. The results of the studies show a wide difference, however, in the ability of the families to make the most of the means at their disposal; some of them obtained ample nourishment at a reasonable cost, while others for the same or even a larger expenditure were not sufficiently nourished. A number of the poorer families were especially undernourished, but some of them obtained much more nutriment for the money expended than did others. It is interesting to compare the studies in these respects.

PECUNIARY ECONOMY OF FOOD PURCHASED.

In the discussion of the studies in the preceding pages, some tables have been given showing the amounts of protein and energy obtained for 10 cents in the different food materials used. The studies for which such tables were provided are believed to be more or less typical, so that the remarks made concerning the economy of the purchases may be applied in a general way to all the studies. In order to show the variations in the prices paid by different families for similar food materials, and especially to illustrate the relative value and economy of different materials as sources of protein and energy, these tables are summarized here.

TABLE 44.—*Cost per pound and protein and energy in 10 cents' worth of various food materials in some typical dietary studies.*

Food materials.	Dietary study.	Price paid per pound.	Amount for 10 cents.		
			Total weight.	Protein.	Energy.
Beef:		*Cents.*	*Pounds.*	*Grams.*	*Calories.*
Chopped	186	10.0	1.00	86	895
Sirloin	154	17.6	.57	42	555
Do	186	13.0	.77	59	760
Flank	161	8.0	1.25	97	1,400
Fore shank	161	5.6	1.79	104	975
Do	186	7.3	1.37	82	745
Hind shank	178	4.6	2.17	94	870
Shank	172	4.0	2.50	109	1,005
Neck	172	8.0	1.25	82	970
Chuck steak	178	10.9	.92	69	675
Do	200	10.0	1.00	75	725
Do	210	9.3	1.08	81	790
Round	200	11.5	.87	75	775
Do	186	12.0	.83	73	745
Skirting	200	5.0	2.00	146	2,075
Stew piece	200	8.0	1.25	55	505
Corned	178	5.2	1.92	159	2,650
Corned, canned	161	20.0	.50	64	560
Liver	172	8.0	1.25	117	720
Tripe, pickled	178	5.0	2.00	106	545
Suet	186	5.0	2.00	41	7,080
Veal:					
Chops	154	12.2	.82	74	675
Do	186	12.5	.80	73	660
Cutlets	186	14.0	.71	64	495
Lamb chops	161	13.7	.73	62	1,120
Mutton:					
Chops	161	18.5	.54	39	915
Leg	172	7.2	1.39	95	1,245
Neck	172	4.5	2.22	123	2,180
Stew piece	200	8.0	1.25	77	1,805
Side	210	11.8	.85	62	1,315
Pork:					
Chops	161	11.2	.90	67	1,410
Do	172	10.0	1.00	61	1,265
Do	186	9.6	1.04	77	1,645
Do	200	9.4	1.06	65	1,355
Loin	178	7.7	1.30	97	2,045
Do	210	10.0	1.00	61	1,275
Head-cheese	210	10.0	1.00	89	1,790
Trimmings	178	8.0	1.25	28	3,535
Ham, smoked	154	12.0	.83	54	1,395
Do	186	20.0	.50	32	835
Ham, boiled	210	20.0	.50	46	655
Bacon	172	12.0	.83	35	2,330
Do	210	10.0	1.00	41	2,800
Salt	161	7.0	1.43	12	5,250
Do	172	9.8	1.02	9	3,765
Feet	172	6.0	1.67	120	2,350
Lard	186	6.0	1.67	.....	7,035
Sausage, Frankfurt	200	10.0	1.00	89	1,165
Chicken	154	11.9	.84	74	890
Do	186	16.0	.63	54	655

TABLE 44.—*Cost per pound and protein and energy in 10 cents' worth of various food materials in some typical dietary studies*—Continued.

Food materials.	Dietary study.	Price paid per pound.	Amount for 10 cents.		
			Total weight.	Protein.	Energy.
Fish:		*Cents.*	*Pounds.*	*Grams.*	*Calories.*
Cod, salt	186	6.0	1.67	145	525
Do	178	8.0	1.25	108	460
Cod, fresh	154	14.8	.68	50	215
Cod, fresh (assumed as cod)	172	6.2	1.61	81	460
Shad	186	10.0	1.00	86	750
Bluefish	172	6.0	1.67	76	350
Herring	178	5.4	1.85	163	1,215
Salmon	210	10.0	1.00	89	680
Weakfish	210	5.0	2.00	78	415
Sturgeon	210	20.0	.50	43	475
Herring, smoked	154	10.0	1.00	93	755
Salmon, canned	161	20.0	.50	49	450
Sardines	161	6.0	1.67	179	1,580
Clam chowder	210	5.0	2.00	16	380
Oysters	154	9.1	1.10	30	260
Butter	154	17.1	.59	.....	2,105
Do	161	18.6	.54	.....	1,935
Do	172	21.9	.46	.....	1,615
Do	178	18.4	.54	.....	1,960
Do	186	20.0	.50	.....	1,800
Do	200	22.5	.44	.....	1,600
Do	210	24.0	.42	.....	1,505
Milk	154	2.6	3.85	58	1,250
Do	161	2.7	3.70	55	1,180
Do	172	2.3	4.35	64	1,385
Do	178	3.2	3.13	47	1,020
Do	186	2.3	4.35	64	1,415
Do	210	2.3	4.35	64	1,385
Milk, condensed	161	7.3	1.37	55	2,090
Do	172	10.0	1.00	40	1,515
Do	200	6.8	1.47	59	2,235
Cheese	154	14.3	.70	82	1,360
Do	186	17.0	.59	68	1,145
Eggs	154	13.1	.76	51	545
Do	186	10.6	.94	59	680
Flour	172	2.4	4.17	211	6,820
Do	178	2.8	3.57	185	5,975
Bread	154	4.4	2.27	95	2,745
Do	161	2.6	3.85	190	4,820
Do	172	4.6	2.17	91	2,640
Do	178	2.1	4.76	233	5,920
Do	186	4.6	2.17	91	2,640
Do	200	3.9	2.56	107	3,110
Do	210	4.1	2.44	101	2,935
Bread, rye	161	3.0	3.33	136	3,940
Do	200	5.0	2.00	82	2,365
Do	210	4.3	2.33	95	2,760
Biscuit, soda	161	3.3	3.00	127	5,185
Crackers, soda	161	4.7	2.14	95	4,130
Rolls, water	172	5.3	1.89	76	2,440
Rolls	200	5.7	1.75	77	2,575
Do	210	6.7	1.50	61	1,950
Cake	154	9.5	1.05	30	1,760
Cake, mixed	161	5.0	2.00	58	3,365
Cake	186	12.0	.83	23	1,395
Do	210	10.0	1.00	28	1,675
Buns	178	4.4	2.27	84	3,325
Doughnuts	210	5.0	2.00	60	4,015
Pie, apple	161	20.0	.50	8	640
Do	186	10.0	1.00	14	1,270
Sugar	154	5.3	1.89	.....	3,485
Do	161	5.5	1.82	.....	3,380
Do	172	4.6	2.17	.....	4,020
Do	178	5.7	1.75	.....	3,280
Do	186	4.8	2.08	.....	3,875
Do	200	5.9	1.70	.....	3,155
Do	210	5.3	1.89	.....	3,485
Cornmeal	186	4.0	2.50	104	4,140
Rice	154	8.0	1.25	45	2,030
Do	186	6.2	1.61	59	2,630
Oatmeal	161	2.3	4.35	320	8,135
Macaroni	154	6.0	1.67	101	2,780
Do	186	6.2	1.61	100	2,685
Vermicelli	186	9.0	1.11	54	1,805
Green vegetables	154	4.6	2.17	13	280
Do	161	2.4	4.17	27	575
Do	172	.8	12.50	66	1,620
Do	178	1.6	6.25	97	1,855

TABLE 44.—*Cost per pound and protein and energy in 10 cents' worth of various food materials in some typical dietary studies*—Continued.

Food materials.	Dietary study.	Price paid per pound.	Amount for 10 cents.		
			Total weight.	Protein.	Energy.
		Cents.	*Pounds.*	*Grams.*	*Calories.*
Green vegetables	200	7.0	1.43	8	210
Do	210	3.5	2.86	45	885
Potatoes	154	3.2	3.13	32	1,220
Do	161	2.0	5.00	51	1,975
Do	172	1.1	9.10	95	3,695
Do	178	1.3	7.69	77	2,960
Do	186	1.3	7.69	77	2,960
Do	200	1.0	10.00	100	3,875
Do	210	2.2	4.55	45	1,755
Fruits	154	9.3	1.08	5	280
Do	161	5.3	1.88	8	495
Sauerkraut	210	4.4	2.25	18	280
Tomatoes, canned	154	3.9	2.55	14	265
Do	200	8.0	1.25	6	130
Do	210	4.0	2.50	14	260
Corn, canned	200	6.7	1.50	19	680
Beans, dried	178	3.7	2.70	273	4,280
Do	186	5.0	2.00	204	3,210
Cabbage	186	1.5	6.67	41	835
Greens, dandelion	186	8.5	1.18	14	335
Greens	186	5.5	1.82	36	400
Onions	186	5.0	2.00	14	410
Pickles	186	10.0	1.00	5	110
Spinach	186	8.0	1.25	14	140
Tomatoes	186	3.8	2.63	9	275
Jelly	186	10.7	.93	9	1,460
Nuts	186	10.0	1.00	36	1,600
Cocoa	186	22.0	.45	45	1,055
Olive oil	186	25.0	.40	.....	1,690

The beef used by the different families included in this table varied from canned corned beef at 20 cents a pound in one study to beef shank at 4 cents in another, and the quantity of protein and energy obtained for 10 cents ranged from 159 grams and 2,650 calories, respectively, in corned beef (not canned) at 5.2 cents per pound to 42 grams of protein and 555 calories of energy in sirloin steak at 17.6 cents per pound. When the quantities of both protein and energy obtained are taken into account, this sirloin steak was perhaps the most expensive meat purchased.

A characteristic difference between beef and pork is well illustrated by the figures in the table, the pork, as a rule, furnishing considerably less protein and considerably more energy for 10 cents than beef.

The price paid for fish and shellfish ranged from 5 cents a pound for weakfish and clam chowder to 20 cents a pound for sturgeon and canned salmon. The fish most economically purchased was canned sardines at 5 cents a pound, furnishing 179 grams of protein and 1,580 calories of energy for 10 cents. The least economical purchase was clam chowder at 5 cents a pound (10 cents a quart), furnishing 16 grams of protein and 380 calories of energy for 10 cents.

The price paid for butter varied from 17.1 to 24 cents a pound, and the energy in 10 cents' worth from 2,105 calories at the lower price to 1,505 calories at the higher price.

Milk was purchased at prices for actual delivery ranging from 4.6

to 6.4 a quart, and constituted a fairly economical source of both protein and energy.

The price at which sugar was purchased varied from 4.6 to 5.9 cents per pound, with corresponding differences in the fuel value of 10 cents' worth, ranging from 4,020 to 3,155 calories.

The greater number of the families studied used little or no flour, but the majority of them purchased considerable quantities of bakers' goods. It is interesting to note in the studies summarized in the table the differences in the price paid for such articles. In 10 cents' worth of stale bread for 2.1 cents a pound one family obtained 233 grams of protein and 5,920 calories of energy, while another family paid 5 cents a pound for rye bread, and obtained for 10 cents only 82 grams of protein and 2,365 calories. The price paid for cake varied from 5 cents to 10 cents a pound, with corresponding differences in the quantities of protein and energy in 10 cents' worth. Buns at 4.4 cents a pound were fairly economical food, while pie at 20 cents a pound furnished comparatively little nutriment for the money.

The family which made this latter purchase, however, obtained many of their food materials at very reasonable rates, and the pie, of which only a small amount was purchased, was probably deemed a deserved luxury. This same family obtained protein and energy very economically in oatmeal at 2.3 cents a pound. It is interesting to note the difference between the nutrients in oatmeal at this price and in rice at 6 cents a pound, or in almost any of the other food materials included in the table. At such a price oatmeal undoubtedly constituted one of the most, if not the most, economical sources of nutriment noted in these dietary studies.

The amounts of protein and energy in green vegetables, such as onions, soup greens, green corn, and the like, are small. While vegetables are more or less of a necessity, in order to provide bulk, to supply the body with mineral salts, and to add to the palatability and attractiveness of the diet, these purposes could probably be served as well by a small as by a great variety. It is a question, therefore, whether it was wise under the circumstances to purchase green vegetables in such variety as was observed in some of the studies. The amount of money spent for soup greens by some families was out of all proportion to their food value. They contain practically no nutriment, and as flavoring materials they were rather expensive at the prices paid; that is to say, it is possible to season soups so that they are palatable with condiments, etc., which cost less. For instance, celery seed could probably be used at less cost than the fresh vegetable. The matter is important chiefly as an illustration of the fact that the practice which is easiest may not be the most economical. It requires more thought and more knowledge to use the less common kitchen condiments, which would in the end be cheaper, than to buy and use the soup greens.

Comparatively few of the families studied made use of such economical materials as the dried legumes in their diet. In the two instances included in the above table the price paid per pound by one family was 3.7 cents, while another paid 5 cents. Even at the latter price there was ten to fifteen times as much protein and energy obtained for 10 cents as there was in canned corn, canned tomatoes, or green vegetables that were used by so many of the families. The economy in the use of the dried legumes and the cereals has been repeatedly pointed out on preceding pages, especially as substitutes for the very uneconomical materials mentioned. It has also been suggested that they might very readily take the place of at least a part of the meat that is so generally considered a necessity by the laboring classes. They supply the same ingredient, protein, as the meat and at a much lower cost.

As will be seen from the table, potatoes were purchased at prices ranging from 1 cent to 3.2 cents per pound, with a corresponding range of 100 to 32 grams of protein and 3,875 to 1,220 calories of energy in the amounts obtained for 10 cents.

Canned tomatoes, which seems to have been a favorite food material with many of the families studied, constituted one of the most costly sources of both protein and energy. Under the circumstances, perhaps this food product should be regarded principally as an appetizer since undoubtedly it rendered the diet more palatable and acceptable and thus doubtless increased the consumption of bread or other food of less marked flavor. Under some circumstances, when used in this way, it perhaps need not be considered as an expensive dish. Its use by families so poor and so undernourished as some of those included in these studies certainly seems unwise, as it simply took the place of other materials very much more nutritious and not unpalatable which could have been purchased for the same sum.

SUMMARY OF AMOUNTS OF NUTRIENTS AND ENERGY IN FOOD CONSUMED PER MAN PER DAY.

The relative economy of the different dietaries may be shown by a comparison of the cost and the quantities of nutrients and energy per man per day in each. Results of the studies reported in this bulletin are thus summarized in Table 45, which also include for purposes of comparison the results of some similar studies previously reported.[a] For convenience in comparison the results have been grouped according to the amounts expended for food, the basis for each group having been adopted arbitrarily, as follows:

Group A includes those in which the cost per man per day is less than 13 cents.

[a] U. S. Dept. Agr., Office of Experiment Stations Bul. 46.

Group B includes studies in which the cost per man per day ranged from 13 to 16 cents.

Group C includes studies in which the cost per man per day ranged from 17 to 20 cents.

Group D includes studies in which the cost per man per day ranged from 21 to 23 cents.

Group E includes studies in which the cost per man per day ranged from 25 to 28 cents.

Group F includes studies in which the cost per man per day was more than 28 cents.

The results of each group have then been averaged together, and the averages compared with one another. In the last group, however, the variation in cost and in amounts of nutrients and energy obtained is rather too wide to include the individual families in an average that could be taken as representative of any class.

TABLE 45.—*Summary of results of dietary studies made in New York City.*

Dietary No.		Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
	GROUP A.—*Studies in which the cost per man per day was less than 13 cents.*	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
48	Sewing woman's family	9	57	41	237	1,585
178	Longshoreman's family	9	86	79	285	2,255
185	Laborer's family	10	86	76	368	2,570
158	Plumber's family	10	64	81	213	1,890
200	Painter's family	11	67	69	285	2,085
210	Housekeeper's family	11	65	75	188	1,735
155	Longshoreman's family	12	94	105	257	2,415
195	Stableman's family	12	88	113	198	2,225
196	Truckman's family	12	58	58	346	2,195
197	Huckster's family	12	84	93	328	2,555
	Average of 10 studies	11	75	79	271	2,151
	GROUP B.—*Studies in which the cost per man per day ranged from 13 to 16 cents.*					
37	Carver's family	13	87	89	262	2,255
167	Carpenter's family	13	89	78	296	2,305
171	Tanner's family	13	113	108	356	2,925
177	Truckman's family	13	98	83	337	2,555
187	Watchman's family	13	79	74	346	2,430
170	Caretaker's family	14	94	116	391	3,065
172	Foundryman's family	14	102	128	462	3,505
34	Watchman's family	14	87	96	296	2,465
51	Shopkeeper's family	15	81	109	355	2,800
161	Washerwoman's family	15	101	145	446	3,590
183	Sail rigger's family	15	127	98	446	3,260
194	Washerwoman's family	15	95	90	397	2,855
209	Sailor's family	15	95	113	303	2,685
35	Dyer's family	16	72	98	314	2,455
110	Salesman's family	16	79	125	347	2,910
112	Tin roofer's family	16	84	114	227	2,335
159	Washerwoman's family	16	119	91	463	3,230
188	Bookbinder's family	16	85	88	309	2,430
199	Carpenter's family	16	105	104	329	2,745
	Average of 19 studies	15	94	102	352	2,779
	GROUP C.—*Studies in which the cost per man per day ranged from 17 to 20 cents.*					
38	Sailors' boarding house	17	96	129	181	2,335
162	Longshoreman's family	17	95	100	283	2,480
32	Jeweler's family	18	101	106	296	2,610
52	Housekeeper's family	18	93	104	509	3,435
201	Expressman's family	18	98	118	385	3,080
192	Butcher's family	19	123	143	312	3,115
111	Tin roofer's family	20	99	125	327	2,910
180	Carpenter's family	20	121	138	442	3,590
	Average of 8 studies	18	103	120	342	2,944

TABLE 45.—*Summary of results of dietary studies made in New York City*—Continued.

Dietary No.		Cost.	Protein.	Fat.	Carbohydrates.	Fuel value.
	GROUP D.—*Studies in which the cost per man per day ranged from 21 to 23 cents.*	*Cents.*	*Grams.*	*Grams.*	*Grams.*	*Calories.*
166	Carpenter's family	21	126	135	452	3,625
107	Truckman's family	22	136	135	595	4,250
106	Printer's family	22	116	124	364	3,120
160	Truckman's family	22	120	145	397	3,470
206	Caretaker's family	22	107	139	436	3,520
31	Carpenter's family	23	151	154	459	3,935
47	Truckman's family	23	104	129	344	3,030
96	Laborer's family	23	139	119	345	3,090
108	Caretakers in day nursery	23	122	158	394	3,585
	Average of 9 studies	22	125	138	420	3,514
	GROUP E.—*Studies in which the cost per man per day ranged from 25 to 28 cents.*					
204	Waiter's family	25	113	143	450	3,640
33	Sailor's family	26	140	145	558	4,190
186	Fruit vender's family	26	141	164	377	3,650
193	Sail rigger's family	26	156	120	435	3,540
205	Landlord's family	26	141	158	479	4,010
168	Housekeeper's family	27	131	206	450	4,295
97	Porter's family	28	142	142	444	3,720
	Average of 7 studies	26	138	154	456	3,864
	GROUP F.—*Studies in which the cost per man per day was more than 28 cents.*					
30	Mechanic's family	32	153	139	528	4,085
122	Mission worker's family	37	143	205	543	4,725
154	Cable gripman's family	36	171	171	460	4,175
147	Builder's family	41	187	219	723	5,770
198	Longshoreman's family	41	212	334	888	7,615
109	Builder's family	42	204	264	714	6,220
	Average of 6 studies	38	178	222	643	5,432

As would be expected, the results show that the families expending the least for food received the least nourishment. Thus the average of Group A shows that among the families included 11 cents provided but 75 grams of protein and 2,150 calories of energy, while in Group F, at an average of 38 cents, there were obtained 178 grams of protein and 5,432 calories of energy. The difference in amounts obtained is not, however, proportionate to the difference in expense. Thus in the average of Group A each cent expended for food purchased about 6.8 grams of protein and 190 calories of energy, while in the average of Group F the amounts obtained for each cent were 4.7 grams of protein and 138 calories of energy, indicating that where there was less to spend there was greater economy in the purchase of food.

The figures in the table also illustrate what has already been pointed out regarding the differences in the ability of different families to provide for themselves economically. Thus in dietary study No. 48 there were obtained for 9 cents a day 57 grams of protein and 1,585 calories of energy, while for the same expenditure the family in dietary study No. 178 obtained 86 grams of protein and 2,255 calories of energy. On the other hand, practically the same amounts of nutrients and energy as in the latter case cost 12 cents for the family in dietary study No. 195. It is interesting to observe also that the family included in dietary

study No. 185 actually obtained for 10 cents more protein and energy than did the family in dietary study No. 188 for 16 cents. Other similar instances of differences in the economy of food purchases might be cited, but the above serve to indicate how one family may be well nourished while a neighboring family, expending for their food as much money per man per day, may be undernourished.

In Table 46 the results of the dietary studies in New York City here reported have been summarized by the averages of the various groups, Group A representing the smallest diet and Group F the most liberal diet observed. For the sake of comparison the results of studies with other persons or groups of persons under various conditions have also been included, as well as the commonly accepted dietary standards representing the average physiological demands of persons of different amounts of muscular work.

As already explained, the fuel values of these dietaries were calculated by use of the old factors, which allow 4.1 calories per gram of protein and carbohydrates and 9.3 calories per gram of fat. In the following table the results as thus calculated are summarized, and also the fuel values, as computed by use of the new factors previously mentioned, which are somewhat smaller, allowing 4 calories per gram of protein and carbohydrates and 8.9 calories per gram of fat. The quantities of digestible protein have also been computed and are given in comparison with the quantities of total protein in the various dietaries.

TABLE 46.—*Comparison of the results of dietary studies in New York City with those of people in different conditions of life, and with dietary standards.*

	Cost.	Protein.		Fuel value.	
		Total.	Digestible.	By old factors.	By new factors.
	Cents.	*Grams.*	*Grams.*	*Calories.*	*Calories.*
Group A (smallest diet found in present investigation), average of 10 studies	11	75	69	2,151	2,087
Group B, average of 19 studies	15	94	86	2,779	2,692
Group C, average of 8 studies	18	103	95	2,944	2,848
Group D, average of 9 studies	22	125	115	3,514	3,408
Group E, average of 7 studies	26	138	127	3,864	3,747
Group F (most liberal diet found in present investigation), average of 6 studies	38	178	164	5,432	5,260
Average of 17 mechanics' families	20	106	98	3,454	3,343
Average of 11 farmers' families	.....	102	94	3,514	3,407
Average of 18 professional men's families	26	108	99	3,406	3,300
Average of 4 poor families in Pittsburg	15	100	92	3,261	3,161
Average of 25 Bohemian families in Chicago	20	139	128	3,483	3,376
Average of 5 Unorthodox Russian Jew families in Chicago	22	144	132	3,044	2,954
Average of 11 Orthodox Russian Jew families in Chicago	19	122	112	3,041	2,951
Average of 4 Italian families in Chicago	17	100	92	3,008	2,917
Average of 5 French-Canadian families in Chicago	22	108	99	3,170	3,067
Average of 25 families (previously studied) in destitute circumstances in New York and elsewhere	9	84	77	2,653	2,573
DIETARY STANDARDS.					
Man without muscular exercise (Atwater)	.....	90	83	2,450	.....
Man with light to moderate muscular work (Atwater)	.....	112	103	3,050	.....
Man with moderately active muscular work (Atwater)	.....	125	115	3,400	.....
Man with hard muscular work (Atwater)	.....	150	138	4,150	.....
Man with very hard muscular work (Atwater)	.....	175	161	5,500	.....

The results of the studies in New York City, when compared with those of similar studies and with the suggested dietary standards, indicate that a considerable number of the families were undernourished. Thus of the 59 families included in the summary, 29 in Groups A and B averaged scarcely 90 grams of protein and 2,350 calories of energy per man per day, while the 8 families in Group C were also somewhat below the normal in the quantity of protein and considerably below it in the quantity of energy obtained. The 9 families in Group D obtained just about what is called for by the standard for a man at moderate work. The remaining 13 families in Groups E and F probably obtained more than they actually needed.

The families included in these studies in New York did not obtain as much nourishment for the money expended as was obtained by families in somewhat similar circumstances in other places. The 4 poor families in Pittsburg, included in the table, for 15 cents obtained 6 grams more protein and 500 calories more energy than were obtained for the same sum by the families included in Group B. A more striking contrast is found in the results of the studies among the families studied in Chicago, also included in the table.

An interesting comparison can be made between the results of the studies in New York and those made in Edinburgh, Scotland, and York, England, previously mentioned, among families in very much the same circumstances as those of the studies reported here. Averaging the 59 studies in New York City, the diet furnished about 110 grams of protein and 3,200 calories of energy per man per day, at a cost of 10 cents. The average of 16 studies of laborers' families in Edinburgh,[a] carried on by Paton, Dunlop, and Inglis, shows about 100 grams of protein and 3,000 calories of energy per man per day, at a cost of 14 cents, and the average of 18 families in York,[b] studied by B. S. Rowntree, shows 95 grams of protein and 2,900 calories of energy per man per day, at a cost of 14 cents.

CONCLUSION.

While the dietary studies of the poor in the congested districts of New York City are still too few in number to warrant sweeping conclusions, nevertheless they unmistakably indicate that a large portion of the laboring classes of those regions are undernourished. This condition, however, in the majority of cases was not due to a lack of means for obtaining sufficient nourishment; the difficulty was rather in the ignorance regarding the proper selection, purchase, and preparation of food materials. There are numerous illustrations in the studies of the fact that it was possible for even the poorer families to

[a] A Study of the Diet of Laboring Classes in Edinburgh, pp. 44–56.
[b] Poverty, a Study of Town Life, pp. 394–413.

obtain sufficient nourishment at a reasonable cost. There was scarcely one case in which it was not easily possible, by a more judicious selection of food materials, to get more nutriment for the money expended than was obtained. Several instances have been pointed out in which some families were getting considerably more than others for the same expenditure.

In a number of cases the increase in nutritive value of the diet could have been obtained, perhaps, only by some sacrifice of variety, which might have made the diet less palatable. This, however, would depend largely upon the skill with which the more economical food materials were prepared for the table. While variety in the diet under some circumstances helps to increase the digestibility of food materials, still it is a question whether the variety found in some of the studies was of any special advantage in this respect. The extent to which variety must give place to actual nutritive value in the selection of foods is a question that must be settled by each family according to its circumstances.

Suggestions regarding the improvement of the food habits of the city's poor can be made here only in the general way in which they have been given in preceding pages. What was said in this connection in the report of the former studies in New York City[a] is directly applicable here.

From the results of all the studies, both those here given and those previously reported, it is quite evident that what is needed among these families more than anything else is instruction in the way to make the little they have go the farthest. This can best be done by concrete examples, by personal visitation and supervision of the purchase and preparation of food. In this there is a wide field for the operations of organizations such as the one which cooperated in making these studies, and a considerable amount of valuable work of this nature has already been undertaken.

Certain it is that improvements in the selection of food so as to secure more and better nutriment at less cost, in the cooking so as to make palatable dishes from inexpensive materials, and in the setting of the table so as to make it an attractive feature of home life, will be important means for the material and moral uplift of families like those whose dietary practice is described in this and the previous report.

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[a] U. S. Dept. Agr., Office of Experiment Stations Bul. 46, pp. 63–65.

APPENDIX.

As was explained on page 9, the percentages of nutrients assumed for the different food materials used in the dietary studies are given in the table following. These are all taken from a publication of this Office, giving average composition of American food materials,[a] but are included here in order that the present bulletin may contain all the data used in the computations of the results here reported.

The numbers in parentheses given in connection with each food material in the detailed tables of the dietary studies on the preceding pages correspond to the numbers in the column headed "Ref. No." in the table below, and the values used for calculating the amounts of nutrients in any food material may be readily found.

TABLE 47.—*Percentage composition of different food materials used in computing the nutrients in the food consumed in dietary studies in New York City.*

Ref. No.	Kind of food material.	Dietary studies in which used.	Protein.	Fat.	Carbohydrates.
	Beef:		*Per cent.*	*Per cent.*	*Per cent.*
1	Bologna	154, 159, 199, 210	18.2	19.7	.....
2	Corned	170	14.4	19.4	.....
3	Do	171, 187, 188, 197, 198, 201	14.3	23.8	.....
4	Corned brisket	155, 158, 178	18.3	24.7	.....
4a	Corned flank	183	14.6	33.0	.....
5	Corned, canned	177	28.9	13.7	.....
6	Do	161	28.2	15.2	.....
7	Corned plate	160	11.7	35.8	.....
8	Corned rib	195	13.7	41.9	.....
9	Do	177	17.5	26.6	.....
10	Corned rump	168	14.3	22.0	.....
11	Corned shoulder	167	28.9	13.7	.....
12	Cottolene	180, 206	.....	100.0	.....
13	Drippings	197	4.1	82.1	.....
14	Frankfurters	200, 206	19.6	18.6	1.1
15	Gelatin	154	91.4	.1	.....
16	Heart	183	14.8	24.7	.....
17	Kidney	180	13.7	1.9	.....
18	Liver	159, 172	20.7	4.5	1.5
19	Liver sausage	160, 166, 197, 199	20.7	4.5	1.5
20	Meat	200, 204	14.8	18.1	.....
21	Neck	172, 177, 183	14.5	11.9	.....
22	Roast	195	22.3	28.6	.....
23	Shank, fore	155, 159, 160, 161, 166, 168, 177, 180, 186, 194, 195, 198, 199, 201, 209.	12.8	7.3	.....
24	Shank, hind	172, 178, 200, 209	9.6	5.3	.....
25	Do	195	20.9	11.5	.....
26	Shoulder	180, 185	16.4	9.8	.....
27	Steak, chuck	155, 158, 166, 168, 171, 177, 178, 198, 200, 201, 210.	16.6	10.1	.....
28	Do	183	18.5	18.0	.....
29	Steak, round	158, 159, 160, 162, 166, 167, 180, 186, 188, 189, 193, 194, 195, 198, 199, 200, 201, 205, 206.	19.0	12.8	.....
30	Do	171	16.4	6.9	.....

[a] U. S. Dept. Agr., Office of Experiment Stations Bul. 28, revised.

TABLE 47.—*Percentage composition of different food materials used in computing the nutrients in the food consumed in dietary studies in New York City*—Continued.

Ref. No.	Kind of food material.	Dietary studies in which used.	Protein.	Fat.	Carbohydrates.
	Beef—Continued.		*Per cent.*	*Per cent.*	*Per cent.*
31	Steak, round, chopped	166, 167	20.3	13.6	.....
32	Steak, skirt	209	19.7	17.7	.....
33	Steak, sirloin	154, 159, 162, 166, 168, 186, 187, 188, 192, 198, 204, 205, 206.	16.5	16.1	.....
34	Do	167	13.3	42.3	.....
35	Steak, skirt	159, 161, 177	17.0	19.0	.....
36	Steak, skirting	185, 200	16.1	17.5	.....
37	Suet	155, 167, 186	4.7	81.8	.....
38	Tripe	155, 177, 178, 196, 199	11.7	1.2	.2
39	Do	158, 171	16.8	8.5	.....
39a	Blood	197	7.5	.....	.....
	Lamb:				
40	Breast	158	19.1	23.6	.....
41	Chops	161	18.7	28.3	.....
42	Leg	170	15.9	13.6	.....
43	Do	160	19.2	16.5	.....
43a	Shoulder	187	18.1	29.7	.....
	Mutton:				
43b	Side	204	13.0	24.0	.....
44	Chops	160, 168, 200, 204	13.5	28.3	.....
45	Do	161, 177, 197	16.0	33.1	.....
46	Do	168, 192	16.0	24.1	.....
47	Leg	168, 171, 196	18.5	18.0	.....
48	Do	172	15.1	14.7	.....
49	Neck	172	12.3	17.9	.....
50	Shoulder	158	17.7	19.9	.....
51	Do	177, 192	13.7	15.5	.....
52	Side	194, 209, 210	16.2	29.8	.....
	Veal:				
53	Breast	162	19.5	14.0	.....
54	Chops	154, 186, 194	19.9	10.8	.....
55	Cutlets	186, 193	20.1	7.5	.....
55a	Head-cheese[a]	197	.....	.....	.....
56	Leg	193	15.5	7.9	.....
57	Loin	198	16.6	9.0	.....
58	Shoulder	170	15.1	6.0	.....
	Pork:				
59	Bacon	158, 159, 162, 168, 172, 183, 195, 197, 198, 201, 204, 210.	9.1	62.2	.....
60	Chops	154, 158, 161, 178, 180, 183, 186, 194.	16.6	30.1	.....
61	Do	159, 166, 171, 172, 196, 198, 200, 204, 209, 210.	13.4	24.2	.....
62	Feet	172	15.8	26.3	.....
63	Feet, pickled	183	16.3	14.8	.....
64	Ham, boiled	155, 177, 180, 206, 210	20.2	22.4	.....
65	Ham, smoked	168, 180, 195	16.3	38.8	.....
66	Do	154, 162, 166, 171, 186, 187, 192, 198, 205, 206.	14.2	33.4	.....
67	Head-cheese	205, 210	19.5	33.8	.....
68	Loin, fresh	201	13.2	26.0	.....
69	Lard	155, 158, 166, 177, 186, 197, 199	.....	100.0	.....
70	Pig's head	155, 170	13.4	41.3	.....
71	Pork as fresh ham	194	15.3	28.9	.....
72	Salt	161, 167, 170, 172	1.9	86.2	.....
73	Do	199	7.4	59.6	.....
74	Sausage	171	13.0	44.2	1.1
75	Sausage meat	185	17.4	32.5	.....
76	Shoulder	170	15.1	6.0	.....
77	Shoulder, fresh	199	12.0	29.8	.....
78	Shoulder, salt	171, 185	15.9	32.5	.....
79	Shoulder, smoked	158, 167, 199	13.0	26.6	.....
80	Spareribs	206	17.3	31.1	.....
81	Spareribs, roast	155, 160, 170, 195, 206	16.6	30.1	.....
82	Trimmings	178, 198	5.0	65.0	.....
83	Poultry: Chickens	154, 180, 186, 187, 193	19.3	16.3	.....
	Fish:				
84	Bluefish, fresh	162, 172	10.0	.6	.....
85	Clams	158	10.6	1.1	5.2
86	Clam chowder	197, 210	1.8	.8	6.7
87	Cod	193, 195, 197, 206	8.4	.2	.....
88	Cod, boneless	171	27.7	.3	.....
89	Cod, fresh	155, 162, 171, 172, 188, 192	11.1	.2	.....
90	Do	154, 183	16.5	.4	.....
91	Cod, salt	167, 168, 178, 186, 188	19.0	.4	.....
92	Flounders	199	5.4	.3	.....
93	Halibut	197	18.6	5.2	.....
94	Halibut, fresh	196	15.3	4.4	.....
95	Herring, fresh	177, 178	19.5	7.1	.....
96	Herring, smoked	154	20.5	8.8	.....
97	Mackerel	159	10.2	4.2	.....

[a] Composition assumed.

TABLE 47.—*Percentage composition of different food materials used in computing the nutrients in the food consumed in dietary studies in New York City*—Continued.

Ref. No.	Kind of food material.	Dietary studies in which used.	Protein.	Fat.	Carbohydrates.
	Fish—Continued.		*Per cent.*	*Per cent.*	*Per cent.*
98	Mackerel, fresh	160, 167	11.6	3.5	.....
99	Mackerel, salt	160, 170	16.3	17.4	.....
100	Mussels, pickled	197	8.7	1.1	4.1
101	Oysters	154, 170, 187, 188	6.0	1.3	3.3
102	Perch	193	6.6	.2	.....
103	Pike	193	9.9	.2	.....
104	Salmon	159, 187, 188	19.5	7.5	.....
105	Salmon, canned	160, 161	21.8	12.1	.....
106	Do	187, 210	19.5	7.5	1.0
107	Sardines	161, 193	23.7	12.1	.....
108	Shad	186	18.8	9.5	.....
109	Smelts	187	17.6	1.8	.....
110	Do	194	10.1	1.0	.....
111	Sturgeon	162	15.1	1.6	.....
112	Do	210	19.3	14.0	.....
112a	Weakfish	210	8.6	1.1	.....
113	Whitefish	198	10.6	3.0	.....
114	Eggs	158, 159, 162, 166, 167, 168, 170, 177, 178, 185, 186, 187, 193, 194, 196, 197, 201.	13.4	10.5	.....
115	Do	154, 204, 205, 206, 209	14.8	10.5	.....
116	Do	155	13.1	9.3	.....
117	Do	161, 171, 180, 183, 188, 192, 195, 198, 199, 200.	11.9	9.3	.....
118	Butter	Used in all	1.0	85.0	.....
119	Buttermilk	206	3.0	.5	4.8
120	Cheese	205	25.9	33.7	2.4
121	Do	209	26.1	33.5	2.3
122	Cheese, cottage	205	18.7	27.4	1.5
123	Cheese, Limburger	162	23.0	29.4	.4
123a	Cream	198	2.5	18.5	4.5
124	Milk	Used in all	3.3	4.0	5.0
125	Milk, condensed	159, 160, 161, 162, 167, 170, 171, 172, 177, 187, 192, 193, 196, 198, 199, 200, 201, 205, 206, 209.	8.8	8.3	54.1
	VEGETABLE FOOD.				
	Cereals:				
126	Barley	177, 183, 187, 194, 198, 209	8.5	1.1	77.8
127	Farina	167	11.0	1.4	76.3
128	Oatmeal	159, 161, 177, 185, 197	16.1	7.2	67.5
129	Do	160, 199	16.7	7.3	66.2
130	Rice	154, 160, 180, 186, 188, 195, 196, 197, 198, 199.	8.0	.3	79.0
131	Flour	159, 166, 167, 172, 177, 178, 180, 193, 196, 198, 199, 204, 205, 209.	11.2	1.0	74.9
132	Flour, low grade	171	14.0	1.9	71.2
133	Flour, prepared	171, 180, 197, 205	10.2	1.2	73.0
134	Bread	Used in all	9.2	1.3	53.1
135	Bread, brown	180	5.4	1.8	47.1
136	Bread, rye	159, 161, 167, 170, 187, 188, 193, 200, 205, 210.	9.0	.6	53.2
137	Do	204	9.6	.6	48.9
138	Bread, stale	155, 158, 159, 161, 178, 185, 209	10.9	1.3	53.6
139	Biscuit, soda	159, 160, 161, 168, 204	9.3	13.7	52.6
140	Buns	160, 167, 178, 185, 188, 194, 201	8.1	6.9	54.2
141	Buns, sweet	167, 194	7.9	4.8	49.7
142	Cake	154, 158, 159, 161, 185, 186, 188, 194, 198, 201, 210.	6.3	9.0	63.3
143	Cake, coffee	160, 162, 193, 194, 196, 199, 200, 201, 206.	7.1	7.5	63.2
144	Do	168, 196, 200	8.1	6.9	54.2
145	Cake, fruit	194	5.9	10.9	64.1
146	Cake, jelly	168	6.3	10.7	65.9
147	Currant loaf	168	6.7	7.6	57.6
148	Cake, sweet	168	5.9	9.0	64.8
149	Cakes, sweet	201, 205, 206, 209	6.3	9.0	63.3
150	Corn cake	168	7.9	4.7	46.3
151	Corn meal	186, 197	9.2	1.9	75.4
152	Crackers	188, 201	10.7	8.8	71.9
153	Do	159	9.7	12.1	69.7
154	Cracker dust	199	10.9	6.0	72.9
155	Crackers, fancy	196	7.4	13.5	63.7
156	Crackers, soda	161, 177, 185, 187, 195, 206	9.8	9.1	73.1
157	Crullers	166, 168, 180, 197, 201, 209, 210.	6.7	21.0	53.1
158	Macaroni	154, 160, 170, 186, 197	13.4	.9	74.1
159	Muffins	188	7.9	4.7	46.3
160	Pie, apple	159, 161, 186, 199, 201, 209	3.1	9.8	42.8
161	Pie, custard	199	4.2	6.3	26.1
162	Pie, lemon	205	3.6	10.1	37.4
163	Rolls, milk	168, 170	8.5	9.6	54.4

TABLE 47.—*Percentage composition of different food materials used in computing the nutrients in the food consumed in dietary studies in New York City*—Continued.

Ref. No.	Kind of food material.	Dietary studies in which used.	Protein.	Fat.	Carbohydrates.
	Cereals—Continued.		*Per cent.*	*Per cent.*	*Per cent.*
164	Rolls, plain	177, 180, 188, 193, 195, 199, 200	9.7	4.2	59.9
165	Rolls, Vienna	166, 205	8.5	2.2	56.5
166	Rolls, water	167, 168, 170, 172, 201, 205, 209, 210.	9.0	3.0	54.2
167	Rolls, wheat	206	9.4	.8	59.4
168	Vermicelli	186	10.9	2.0	72.0
	Sugars, starches, and oils:				
169	Sugar	Used in all	.....	.....	100.0
170	Molasses	185, 209	2.4	.....	69.3
171	Cocoa	168, 186, 192, 206	21.6	28.9	37.7
172	Cornstarch	185, 205	.....	.....	90.0
173	Olive oil	186, 198	.....	100.0	.....
	Vegetables:				
174	Asparagus	154	1.8	.2	3.3
175	Beans	166, 170, 178, 180, 183, 186, 187, 196.	22.5	1.8	59.6
176	Do	209, 210	4.7	.3	14.6
177	Beans, string	155	2.3	.3	7.4
178	Do	161	2.1	.3	6.9
179	Cabbage	155, 158, 160, 161, 162, 166, 167, 168, 170, 172, 177, 178, 180, 187.	1.6	.3	5.6
180	Do	183, 185, 186, 192, 194, 195, 198, 201, 205, 206.	1.4	.2	4.8
181	Cabbage sprouts	187	4.7	1.1	4.3
182	Carrots	178, 187, 194	1.1	.4	9.3
183	Cauliflower	206	1.6	.1	4.2
184	Corn	158, 166, 167, 170	3.1	1.1	19.7
185	Corn, canned	159, 160, 161, 168, 188, 200, 209	2.8	1.2	19.0
186	Cucumbers	155, 206	.8	.2	3.1
187	Do	199, 205	.7	.2	2.6
188	Greens	167, 179, 186, 201, 209, 210	2.4	1.0	10.6
189	Do	166, 171, 177, 180, 183, 186, 187, 194.	4.2	.6	6.3
190	Do	197	1.8	.4	1.7
191	Horse-radish	198	1.6	.2	11.3
192	Leeks	193	1.0	.4	5.0
193	Lettuce	154	1.2	.3	2.9
194	Do	197	1.0	.2	2.5
195	Onions	154, 155, 158, 159, 160, 161, 166, 167, 170, 171, 172, 186, 193, 194, 195, 196, 198, 199, 200, 201, 205, 206, 209, 210.	1.4	.3	8.9
196	Do	177, 178, 180, 183, 187	1.6	.3	9.9
197	Parsley	186, 192, 199	2.4	1.0	10.6
198	Parsnips	193	1.3	.4	10.8
199	Peas, canned	160, 180, 196	3.6	.2	9.8
200	Peas, dried	160, 178, 187, 197	24.6	1.0	62.0
201	Peas, green	206, 209	7.0	.5	16.9
202	Pickles, cucumber	194, 205	.5	.3	2.7
203	Pickles, mixed	186	1.1	.4	4.0
204	Potatoes	Used in all	2.2	.1	18.4
205	Potatoes, cooked	197	2.5	.1	20.9
206	Potatoes, sweet	170	1.4	.6	21.9
207	Do	193	1.8	.7	27.4
208	Radishes	154, 200	1.3	.1	5.8
209	Do	159, 205	.9	.1	4.0
210	Rhubarb	201	.4	.4	2.2
211	Salad	166	1.2	.3	2.9
212	Sauerkraut	166, 180, 194, 210	1.7	.5	3.8
213	Scallions	197	1.4	.5	9.2
214	Spinach	155, 186	2.1	.3	3.2
215	Tomatoes	158, 159, 161, 162, 166, 167, 168, 170, 171, 172, 180, 186, 187, 192, 193, 195, 205.	.9	.4	3.9
216	Tomatoes, canned	154, 158, 159, 160, 162, 177, 183, 188, 197, 199, 200, 204, 205, 209, 210.	1.2	.2	4.0
217	Tomato catsup	168, 187	1.5	.2	12.3
218	Turnips	162, 170, 171, 178, 183, 185, 192, 194, 195, 196.	1.3	.2	8.1
219	Do	172, 199	.9	.1	5.7
	Fruits:				
220	Apples, dried	177	1.6	2.2	66.1
221	Apples	159, 170, 193, 194, 201	.3	.3	10.8
222	Do	166, 168, 180	.4	.5	14.2
223	Apple butter	210	1.2	.1	58.5
224	Apricots	206	1.0	.....	12.6
225	Bananas	154, 167	1.3	.6	22.0
226	Do	161	.8	.4	14.3
227	Cherries	154, 206	1.0	.8	16.7
228	Currants	159, 161	1.5	.....	12.8
229	Gooseberries	206	.4	.6	9.9

TABLE 47.—*Percentage composition of different food materials used in computing the nutrients in the food consumed in dietary studies in New York City*—Continued.

Ref. No.	Kind of food material.	Dietary studies in which used.	Protein.	Fat.	Carbohydrates.
	Fruits—Continued.		*Per cent.*	*Per cent.*	*Per cent.*
230	Grapes	167	1.0	1.2	14.4
231	Jelly	196, 198	1.2	.....	59.8
232	Jelly, currant	160, 180, 186	.2	7.1	67.5
233	Lemons	168, 205, 206	.7	.5	5.9
234	Muskmelon	161	.6	.....	9.3
235	Peaches, preserved	206	.7	.1	10.8
236	Pears	159	.5	.4	12.7
237	Prunes	168, 187, 188, 198	2.1	.....	73.3
238	Raisins	198	2.3	3.0	68.5
239	Strawberries	154, 201, 205, 206	.9	.6	7.0
240	Raspberry jam	206	1.2	.....	59.8
241	Watermelon	206	.2	.1	2.7
242	Nuts	186	7.9	31.5	6.7
243	Beer	204	.5	.....	11.5

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